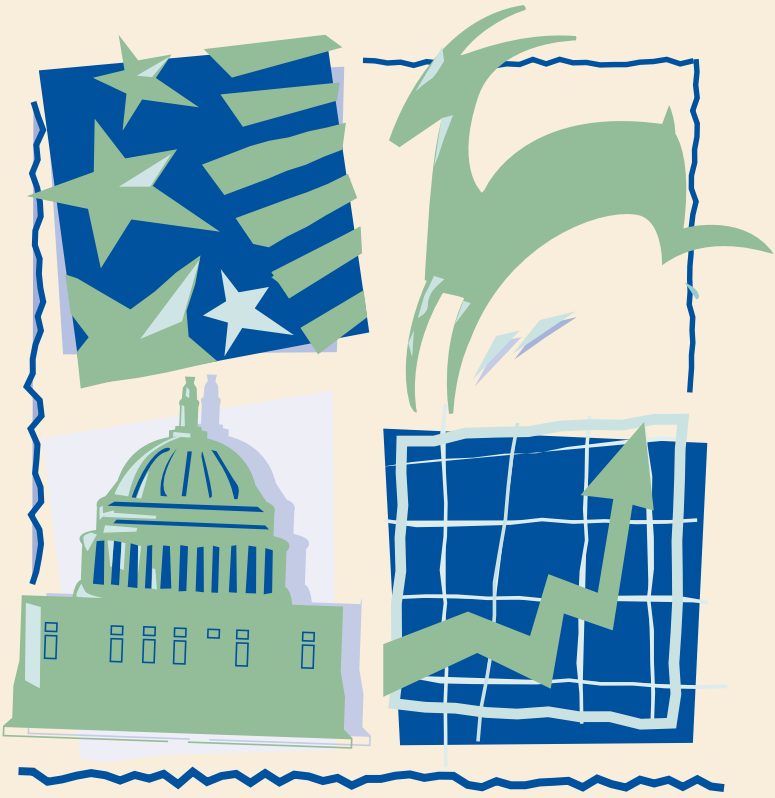
National Commission on Entrepreneurship

American Formula For Growth

Federal Policy & the Entrepreneurial Economy, 1958–1998



NATIONAL COMMISSION ON ENTREPRENEURSHIP

An Initiative of the Ewing Marion Kauffman Foundation

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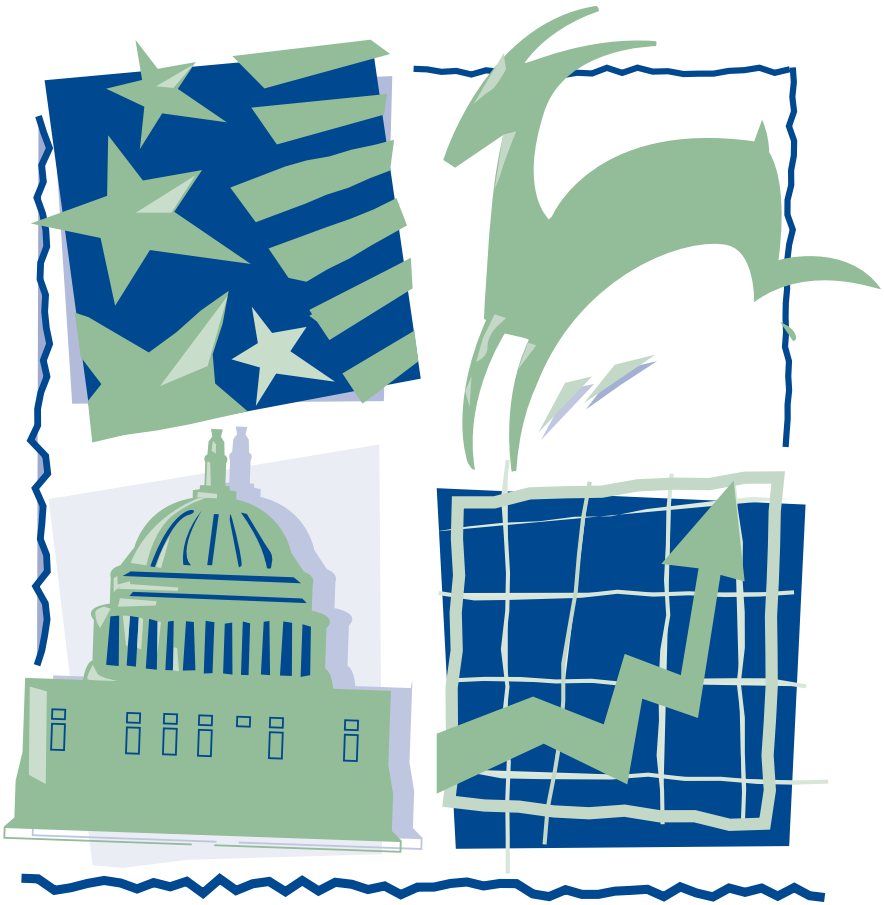

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An Initiative of the Ewing Marion Kauffman Foundation

October, 2002

Dear Reader:

American Formula for Growth: Federal Policy & the Entrepreneurial Economy, 1958-1998 is a thoughtful examination of the public policy roots of today's entrepreneurial economy. So much of the United States' public policies and cultural dynamics are taken for granted that it is time to step back and look at how we got to where we are.

Research Starting-Point. This report can serve as a useful research guide for policymakers, thought leaders, and entrepreneurs who are looking to develop new policy ideas. It explains that some of the decisions that American policymakers made—many not in the traditional business policy arena—had profound impacts on our country's fastest-growing businesses and now constitute a unique formula for entrepreneurial growth.

Policy Map. We believe that policymakers need to understand the role these policies play in fostering a favorable environment for America's entrepreneurs and to take care that they do not unintentionally impair this policy formula with future decisions designed to achieve other worthy goals.

Action Agenda. Moreover, we offer an action agenda in this report—a nonpartisan list of suggestions for policy changes that could actually improve upon this American policy formula for growth, in five of the most important areas affecting the entrepreneurial economy: capital markets, research & development and intellectual property protection, workforce quality, expanding markets, and physical and social dependable infrastructure.

We hope this report is useful to our readers and look forward to working with you on ensuring that the United States maintains its entrepreneurial leadership role in the fast-changing global economy.

Sincerely,

Patrick Von Bargen
Executive Director
National Commission on Entrepreneurship

Executive Summary

The rise of entrepreneurial growth companies (EGCs) has been one of the most significant developments in the American economy over the last 40 years. These companies have not only created millions of new jobs and brought thousands of innovations to market, but they have also been important change agents in the economy and society—contributing to large productivity gains, radically transforming whole industries, and, in turn, contributing to an ever-improving standard of living for Americans. Although this report appears at a time of sluggish economic growth, preceded by the Internet-telecommunications boom and bust of 1998-2001, and accompanied by the market and political turmoil caused by major corporate accounting scandals, it takes a longer view. It focuses not on the last four years, but on the last 40 years of an "entrepreneurial revolution" that changed the dynamics of the American economy.

The question occurs: did public policy in the United States have anything to do with the rise of this entrepreneurial economy?

The founding members of the National Commission on Entrepreneurship had an instinctive, intuitive sense that there was, in fact, a complex mixture of public policies that, intentionally or not, contributed basic ingredients for developing the American formula for growth through entrepreneurship. This formula helped lead to the creation of the entrepreneurial economy. The Commissioners also believe that there remains an unclarified combination of policies that, if acted upon, will enhance that formula and advance the entrepreneurial revolution over the coming decades. There is a kind of genetic

code of democratic capitalism that, if protected and extended, would expand entrepreneurial opportunities for future generations.

To explore this intuition, the National Commission on Entrepreneurship gathered experts on both the east and west coasts who participated in building this entrepreneurial economy over decades. These builders of our entrepreneurial economy—veteran venture capitalists, lawyers, accountants, educators, and entrepreneurs themselves—shared their ideas about policy decisions that support today's entrepreneurs. They identified five major areas of public policy that made a profound difference. Policymakers may not have fully understood what they were doing, since the effects of many policies on the entrepreneurial sector are often by-products of policies addressing other, broader issues. They also may not have intended the consequences that resulted. But it is hard to imagine the success of American EGCs—and thus much of the success of the American economy in the last 40 years—without these policy measures.

Importantly, policymakers began their work in a legal framework that is too often taken for granted but lies at the foundation of the entrepreneurial economy's success. The most useful measures which helped develop the American formula for growth fall into five key areas. But policymakers could craft useful measures in these five areas only because of the nation's prior commitment to a rigorous constitutional and legal system. This system provides a foundation of a society governed by the "rule of law"—a standard that many emerging economies cannot yet meet.

Five Key Ingredients Contributing to the American Formula for Growth:

Creating Financial Markets to Fund EGCS. The capital needs of EGCs range widely, depending on the stage of development: start-up (up to $300,000); early stage ($300,000 to $3 million); and the venture capital stage ($3 million and up). To increase capital access at each of these stages, policymakers from time to time made critical changes to the securities, banking, bankruptcy, tax, and pension laws, as well as creating some new programs to fund businesses directly. Moreover, public policy supported a framework for increasing market liquidity. For example, the creation of NASDAQ greatly enhanced investor liquidity and, consequently, EGCs' ability to raise capital in public markets. And the accounting, anti-trust, and tax law treatment for

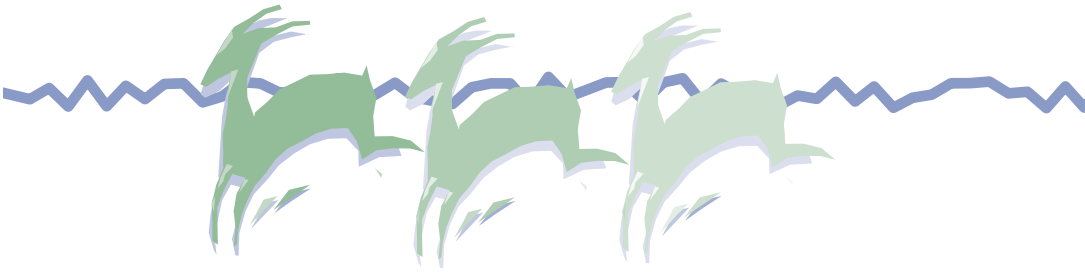
mergers and acquisitions provided alternative and robust avenues for investor liquidity.

Providing R&D and Intellectual Property Protection For Technologies that Underlie Many EGCs. Public policy played an instrumental role here in several ways. First, policymakers funded the research and development of new technologies. Second, over time they allowed universities and labs to license for commercial use any and all of the technologies developed with federal funds via the Bayh-Dole, Stevenson-Wydler, and National Competitive Technology Transfer Acts. And finally, they steadily pushed the pendulum back in favor of increasing intellectual property protection for EGC innovations through myriad changes to the patent and copyright laws and to the judicial process through which such rights may be asserted.

Investing in Technically Talented People and Enabling Them to Move to EGCs. Federal policymakers' response to the Sputnik challenge was to channel more money into research universities and student aid programs to produce new caches of scientists and engineers. Liberal immigration policies allowed large numbers of technically trained immigrants to join the effort. And to encourage the movement of key people to EGCs, they adopted tax-favored Incentive Stock Option, Employee Stock Purchase, and Employee Stock Ownership Plans. Finally, policymakers made it easier to move from company to company by giving COBRA protection to employee health-care benefits, and by establishing defined-contribution pension plans that vest early and follow the employee.

Opening New Markets and Easing Entry for EGCs. Policymakers opened this 40-year period by creating a truly national domestic market through the adoption of the Uniform Commercial Code. The most significant policy contributions in this area came with the deregulation of the airline industry, the package delivery industry, the trucking industry, the telecommunications industry, and to some extent, the information technology industry—opening large new market opportunities for EGCs. Finally, these efforts were complemented by 40 years of aggressive trade policies to open overseas markets, beginning with the General Agreement on Tariffs and Trade.

Establishing a Robust and Dependable Infrastructure. Entrepreneurial growth companies also benefited from federal policymakers' attention to establishing the nation's extensive transportation and communication infra-



structure. Large sums of money were appropriated to build the federal interstate highway system, the national port (air and sea) system, and the telecommunications/wireless and Internet infrastructure. And the generous federal support for the nation's colleges and universities—through the G.I. Bill of Rights, the National Defense Education Act of 1958, the Higher Education Act, and the National Science Foundation's investments—helped make America's higher education system the best in the world.

Finally, while we have recognized in recent years the higher rates of job and wealth creation generated by innovative EGCs as they grow, we sometimes fail to note that federal public policy over the last 40 years also has encouraged this entrepreneurially created wealth to be reinvested in the nation's communities by providing for tax-favored philanthropy.

The Policy Challenges for the Future. These five major areas of public policy contributions produced an environment conducive to the start-up and growth of EGCs. But issues remain. What challenges do we face to improve America's international competitiveness, long-term economic growth, and national security? And what particular policies figure into those challenges?

Before addressing specific policy challenges, the report urges two guiding principles on federal policymakers. First, policymakers should be aware of and should do no harm to the existing federal policy formula from which entrepreneurs and the nation benefit. Second, in attempting to further accelerate entrepreneurship in America, policymakers should note that for entrepreneurs, the best role for government is to set up the "rules of the game" at the macro-level and to use the private sector to deliver program services at the micro-level. For example, public policy is most effective when it:

- fosters institutions (NASDAQ, SBICs) that are based on private investors as the first risk-takers and are privately run;
- increases investor confidence in the integrity of self-regulatory mechanisms (FASB, GAAP, NASDAQ);

- invests in long-term institutional research and development, including basic research, that businesses may not do on their own (NIH funding);
- clarifies who owns what property and thus who has the incentive to exploit it commercially without conflict of interest (Bayh-Dole, patent and copyright law);
- uses its uniquely governmental prerogatives (the power to tax, regulate immigration, procure goods and services for itself) to encourage the formation and growth of entrepreneurial companies (favorable capital gains tax rates on EGCs, tax-favored stock options plans, H1-B visa program);
- uses its trade negotiation powers and statutes regulating domestic commerce to enhance market opportunities for EGCs generally (trade expansion, industry deregulation, vigorous competition policy); or
- provides the physical, education, cultural, and recreational infrastructure that is especially valuable to start-up and growing companies.

A supportive policy framework has proven to be more effective in creating an entrepreneurial economy than have programs providing direct funding to companies. Such programs have too often resulted in companies' continued dependence on subsidies by substituting political imperatives for market imperatives.

ACTION AGENDA

Beyond following this report's recommended principles for effective policy making for the advancement on entrepreneurship, policymakers should execute an action agenda to address specific issues that will expand and extend the entrepreneurial economy. Policymakers should:

- ☑ Institutionalize structures in the executive branch and the legislative branch to monitor progress in all five policy areas: to track developments, to ask how proposed legislation or regulation is likely to affect entrepreneurs, and to lead efforts to shape policy responses to the specific challenges facing the entrepreneurial economy.
- ☑ Invest in a system to collect and disseminate business statistics that accurately describe the entrepreneurial economy in real time. Government data currently available to policymakers regarding the entrepreneurial economy are dated, incomplete, and off-target.

- ☑ To address the early-stage capital gap, use tax policy, securities regulation, and pension law to increase the pool of individual investors who will consider investments in entrepreneurial companies that need more than $300,000 but less than the $3 million average venture capital investment. Address the early-stage capital gap also by changing the tax code to allow the reinvestment of more of the early profits to nurture rapidly growing companies.
- ☑ Increase federal spending for R&D in the physical sciences in parallel with the nation's life sciences investments.
- ☑ Provide incentives to more universities to use technology transfer to spin-out entrepreneurial growth companies founded on ideas produced by federally sponsored, university-conducted research.
- ☑ Provide additional incentives to colleges and universities to produce the number of graduates in science and engineering necessary to fuel the entrepreneurial economy.
- ☑ Restore the previous tax treatment for EGCs' broad-based employee stock option programs by reforming the alternative minimum tax.
- ☑ Provide expanded support to entrepreneurial companies' capacity to engage in more international trade.
- ☑ Examine the structure of key industries (telecommunications and energy, for example) to ensure that we have the deregulatory and pro-competition policies in place to encourage entry by entrepreneurial companies.
- ☑ Take the bold steps required to build out the next phase of critical physical infrastructure—broadband deployment.
- ☑ Seed the social and other support infrastructure institutions, like entrepreneurial networks, in regions and communities of the country where the opportunity for entrepreneurial expansion is great and where rates of entrepreneurial activity are unacceptably low.

We must never allow ourselves to think that we have perfected the American formula for growth; we must continue to modify it to meet changing market and societal needs. Moreover, we cannot lose sight of the fact that policy-makers in other nations and international organizations are looking to the U.S. and deciding whether to adapt parts of the American formula for growth to their needs. For building entrepreneurial economies around the world may well mitigate the increasing challenges to world security posed by the perception and the reality of "have" and "have-not" nations.

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Introduction: The Entrepreneurial Economy

The economic landscape of the United States has changed dramatically over the last 40 years. But the scope of one such change—led by a small group of high-growth entrepreneurial companies that transformed the industries they entered—has escaped the notice of many observers.

High-growth entrepreneurial companies are now more than household names; indeed, it is hard to imagine daily life without them. We get dressed in the morning with casuals purchased at the Gap or The Limited, pick up a Starbuck's latte on the way to work, boot up our Dell computer with an Intel processor inside, arrange for Federal Express to pick up an important package, grab our Palm Pilot as we head to a meeting, take the car over to Jiffy Lube, and use our cell phone to alert friends we'll be slightly late

for lunch—and that just takes us to about noon. These once small entrepreneurial companies changed the world as they created whole new industries or radically changed the course of the established industries they entered.

From a macro-economic perspective, these small entrepreneurial companies have been important drivers of economic growth in the United States. Roughly, data collected at different times over the last 20 years show that these companies create two-thirds of all the new jobs, more than two-thirds of the innovation in the economy, and account for two-thirds of the differences in economic growth rates among industrialized nations. They have been the change agents in the economy and society, forcing the country to new productivity levels and radically transforming whole industries. In the opinion of one observer, they worked nothing short of an "American Entrepreneurial Revolution," altering permanently the economic and social structure of the nation.[1]

WHAT DOES PUBLIC POLICY HAVE TO DO WITH IT?

What role, if any, did public policy play in creating an environment in which these revolutionary companies could start and grow? Many people greet the question with a series of responses. First, with surprise that it is asked at all, because they assume—incorrectly—that entrepreneurs are lone visionaries who do it all by themselves.[2] Second, with barely disguised derision ("You mean you're from the government and you're here to help?"). Finally, and somewhat grudgingly, they might scratch their heads and say something like, "Well, I heard something about the Department of Defense helping start the Internet, and I suppose there's been federally-funded basic research that led to some new bio-tech drugs."

But the founding members of the National Commission on Entrepreneurship (NCOE) had an intuitive sense that there was in fact a complex mixture of public policies that, even if unintentionally, had a sustained impact on the creation of this entrepreneurial economy. These policies provided the basic ingredients for the American formula for growth. The commissioners believe there remains an unclarified combination of policies that, if acted upon, would advance the formula for the entrepreneurial economy. There is a kind of genetic code of democratic capitalism that, if protected and extended, would expand entrepreneurial opportunities for future generations.

To explore this intuition, the National Commission on Entrepreneurship gathered some of the people who actually participated in building the entrepreneurial economy of the last 40 years, on the east coast and in Silicon Valley. The opinions of the veteran venture capitalists, entrepreneurs, lawyers, accountants, educators, and consultants convened by NCOE provide a thoughtful framework to discuss public policy.

They believe that federal policies have had, cumulatively, a profound impact on the entrepreneurial economy as we know it today. In five key areas, these new enabling policies appear to have created the make-or-break difference in our entrepreneurial vibrancy compared to all other nations.

To some extent, the benefits of these policies were accidental. Federal policymakers may not have fully understood, and certainly did not clearly foresee, the consequences of their changes. They may not have consciously intended that these policies primarily benefit entrepreneurs. But remarkably, this combination of policies made important changes that addressed very specific, critical needs for entrepreneurial company success. In fact, without the adoption of these new enabling policies, it would have been hard to have realized the breadth and depth of the entrepreneurial revolution that changed the American economy.

The Starting Point: American Rule of Law

Before describing the specific policy changes of the past 40 years that accelerated the American entrepreneurial revolution, we must stop to reflect upon the legal framework in which all of this new policy work was done. It is easy to take for granted our constitutional system of checks and balances and the rule of law. In a way, it is the air that entrepreneurial growth companies (EGCs), and all businesses, breathe; its benefits can become so routine that we forget they exist. But the rule of law has played a critical role in enabling the entrepreneurial economy.[3] Simply put, it reduces risk—the risk of not having enforceable contract rights, transparency of information, or fair treatment in the resolution of a dispute, among others.

The rule of law can be defined in various ways, but generally a nation (and its economy) is governed by the rule of law if: (1) there is an internally consistent hierarchy of laws with a constitution legitimated by the consent of the governed; (2) laws, and the process of lawmaking, are rational; (3) laws apply equally to similarly situated persons and institutions; (4) laws apply to government just as they do to persons and businesses; (5) laws are published and knowable; (6) rules and standards of conduct are clear, ascertainable, and comprehensible; (7) laws change with the times, but in an orderly, transparent, and evolutionary process; (8) laws are not retroactive in application; (9) laws do not require the impossible—they do not impose unreasonable obligations on citizens; and (10) laws are part of a coherent body of law, not giving with one hand yet taking away with the other.[4]

The extraordinary importance of the rule of law to the American economy was brought into focus most recently by the outrage and shock expressed in the wake of the Enron, WorldCom, Tyco and other corporate accounting scandals that violated the trust engendered by the rule of law. But its importance was earlier brought into sharp contrast shortly after the fall of

the Soviet Union. The very technologically advanced economies of Russia and other Eastern European nations had to struggle mightily to attract outside investment because the key elements of the rule of law were not in place.[5] In an effort to speed the transition from centrally planned economies to market economies that would attract entrepreneurs and risk-oriented investors, several of these nations explicitly embarked on "rule of law projects" to bring their legal and governance systems into conformance with the principles outlined above.

American entrepreneurs appreciate the value of the rule of law when they attempt to navigate the legal structures of certain other countries where they want to do business.

For example, consider the rule of law as it applies to non-judicial public officials. Irrespective of the particular regulatory scheme to which a government agency or official is subject, the constitution requires that citizens enjoy due process of law. This means that elected officials and their staffs should not act in an arbitrary or unreasonable manner. Any decision—to deny a permit or even to delay action on an application—should be supported by evidence that the official followed published procedures and that he acted reasonably. Moreover, the decisions of government officials and their staffs are subject to judicial review. Again, the day-in, day-out operation of the rule of law sets the expectations of all the players in the economy. It helps entrepreneurs achieve their objectives by giving them access to truly national commercial and financial markets cost-effectively, at the speed required, and with a high degree of confidence and trust.

Or focus briefly on the American court system as the enforcer of contracts. Probably the most likely aspect of the legal infrastructure to be taken for granted, American courts are largely corruption-free. Unlike many other countries in the world, bribes to public officials and pay-offs to judges in the United States generally will not secure the results that certain business people may be willing to pay for. Moreover, the decisions of U.S. courts are subject to appeal and review—again, in accordance with rule-of-law principles. Entrepreneurs in the U.S. benefit from this much-vaunted rule of law in a real, practical sense. Parties to contracts expect them to be enforced in the courts according to long-articulated legal precedents, not according to the wealth or power of one of the parties. The predictability of results, without

the need to pay off officials, provides the stable, cost-effective, and generally trustworthy legal environment in which entrepreneurs thrive.

The strength of American rule of law has produced trusting behaviors even in negotiations that are not yet enforceable contracts. Consider the ubiquitous use and central role of the "term sheet" to EGC financing. It is the common practice for entrepreneurs to negotiate with angel or institutional investors all of the key conditions of a million-dollar investment round on a two-page term sheet. This term sheet is not an enforceable contract and may be agreed to months before the closing of the financing round, when the company actually receives the money invested. And often the 50-to-100-page documents signed at the closing—the enforceable contracts that govern the transaction—are finalized only hours before the closing.

Our constitutional system of checks and balances and the rule of law is the air that entrepreneurial growth companies and all businesses breathe.

But during the months-long interim and acting solely on the provisions of the term sheet, the company often hires new executives, changes the responsibilities of the founders of the company, signs key agreements with suppliers and customers, restructures its stock option and compensation programs, and the like. Without the trust and confidence generated by American rule of law, entrepreneurs could not continue to grow their companies with the speed demanded by the competitive marketplace even as they wait for investment funds to be deposited into their accounts.

Without the trustworthy, dependable, confidence-building legal framework of the American rule of law in place, it is hard to imagine that the five major policy contributions identified below would have had a fraction of the success they did.

Five Major Areas of Public Policy Contributions

The seasoned practitioners convened by the National Commission on Entrepreneurship identified five key areas of public policy that provided the basic ingredients for the American formula for growth through entrepreneurship. These policies—mixed with innovations, investment and ingenuity of entrepreneurs, venture capitalists and others participating in the entrepreneurial revolution—helped create and sustain the entrepreneurial economy. This American formula for growth has also helped perpetuate our international competitiveness and protect our national security. Acting at different times, and often for different reasons, policymakers fashioned policies, regulations, and laws that were highly instrumental in fostering:

- Capital markets to finance entrepreneurial growth companies (EGCs);
- Research & development and intellectual property protection for new technologies that gave rise to the products of EGCs;
- Workforce investment and mobility by investing in technically talented people and encouraging them to move to EGCs;
- Market opportunities for EGCs; and
- A robust and dependable infrastructure on which EGCs depend for their success.

1 Creating Financial Markets to Fund Entrepreneurial Growth Companies

The most significant step over the last 40 years was making the capital markets more accessible to EGCs for needed investment funds.

Just as the rule of law underpins the success of all of the public policy contributions to the entrepreneurial economy, the American securities and financial disclosure system creates an atmosphere of confidence and trust that makes entrepreneurs' access to capital possible. As entrepreneurs move up the capital markets "food chain"—from cobbling together money from a variety of sources in the bootstrapping or start-up stage, to securing angel investments, to venture capital financing, and then to going public—this securities regulation and financial disclosure system becomes increasingly important to EGC success.

The Securities Act of 1933, the Securities Exchange Act of 1934, the adoption of the Uniform "Blue Sky" (State Securities Regulation) Law, all the regulations promulgated under these laws, and the set of Generally Accepted Accounting Principles (GAAP) administered by the Financial Accounting Standards Board (FASB) set up a system of securities regulation based on

1933 The Securities Act

1934 The Securities Exchange Act

1939 GAAP regulations

1953 SBA's 7(a) Guaranty Loan Program

1958 Small Business Investment Company Act

1971 Creation of NASDAQ by the SEC

1974 ERISA

1976 Hart-Scott-Rodino Act

1977 FASB treatment of "pooling" of assets

1978 Liberalization of bankruptcy system

1978 Revenue Act cuts capital gains rates

1980 ERISA regulations re: pension fund investment in high risk ventures

1980 DOL gives VC's "safe harbor" exemption from ERISA

1980 Business Investment Incentive Act

1986 Tax Reform Act

1996 Adoption of Uniform Blue Sky Law

the principle of full disclosure. The system forces companies to disclose all information that could be relevant to an investor's decision to purchase stock in a company, as appropriate to the size of the company, the number and sophistication of the investors, and other factors. And the expectation is that the rule of law—operating within the supervision of the Securities Exchange Commission (SEC), the prosecutorial responsibilities of the United States Attorneys, and in the threat of private civil suits litigated in state and federal courts—will produce company representations that are not fraudulent or materially misleading.

The stability and transparency created by this regulatory regime have allowed private investors, located anywhere in the country, to contrast and compare investment opportunities, located anywhere in the country. It has given investors confidence that they know all that is important to know about a company and that no one is hiding important information from them. The system has increased the nation's pool of private equity capital available to EGCs and has permitted entrepreneurs to tap into this pool at a reasonable cost.

Investor confidence was shattered by the corporate practices uncovered in the Enron, WorldCom, Tyco, and other corporate scandals. In fact, the shock waves created by these scandals are so profound precisely because investors have

The most significant step over the last 40 years was making the capital markets more accessible to entrepreneurial growth companies for needed investment funds.

relied so heavily on the regulatory system surrounding securities transactions. The scandals are testing the legal boundaries of the system of financial disclosure as broad reviews, thoughtful debates, and appropriate reforms take place to restore the full measure of trust and confidence the system should command. If successful, the process of reform and the willingness to look at additional investor protections should provide further evidence of the strength and adaptive resiliency of America's rule-of-law-based system.

We can look at specific policies that created new access to the capital markets through the lens of an entrepreneur. We focus on the roughly defined stages of growth that EGCs experience and the likely sources of financing they receive at each stage: start-up, early stage, venture capital investment rounds, and initial public offerings or acquisitions.

laws

Start-Up: Securities Laws, Banking Laws, and Bankruptcy Law

In the start-up stage, an entrepreneur's capital need ranges from just a few thousand dollars up to $300,000, and she finds the money in various ways. First, she will put her savings into the business. Second, she might solicit equity investments from family members or very close friends. Third, she will likely accept every credit card she receives in the mail.[6] And fourth, she might take out a second mortgage on the house.

The combination of all these pots of money—more a cobbling together in "bootstrap" mode than a neatly designed package of sources of funds—constitutes her company's start-up financing. Federal public policy has played a major role in making this start-up financing possible.

First, changes to the securities laws provided broad exemption from securities registration requirements for investments by friends and family in small, early-stage rounds.[7] The changes drastically reduced the cost of properly selling stock to these critical initial equity investors in EGCs.

Moreover, banking laws allow for access on a non-discriminatory basis to an abundance of credit card funds.[8] Also, changes to the bankruptcy laws starting in 1978 favor the individual creditor in a way that she does not risk losing house and home if her business fails and she cannot pay the balances due on her credit cards.[9] These bankruptcy law protections not only allow a failed entrepreneur to get back on her feet (and perhaps start up another company), but also avoid, in contrast to other industrialized countries, stigmatizing the failed entrepreneur as an undesirable actor in the economy.[10] They make possible the widespread view in vibrant entrepreneurial regions of the country that a business failure and bankruptcy are acceptable—experiences not to be ashamed of, but to be learned from.

Early-Stage Financing: Capital Gains Tax Rates and Tax Shelters

Entrepreneurs needing more than $300,000 to grow their companies, but less than the threshold minimum round of financing that venture capitalists offer, face an enormous challenge. In some cases, they may run businesses that are beginning to make profits or involve inventory or physical assets in which banks can take a security interest. Here the Small Business Administration's 7(a) Loan Guaranty Program, can be of great assistance.[11]

But in many cases, entrepreneurs need to find equity capital to fund the research or attract the talent that are necessary to move past the start-up stage. The primary fuel for fast-growing companies is equity capital, and federal policy took several giant steps to increase the supply of this fuel for entrepreneurs.

When entrepreneurs need more than $300,000 but less than $3,000,000, individual equity investors (sometimes called angel investors) play a big role. For example, consider that in 1999, while institutional venture capital funds invested $46 billion in EGCs, private investment by individuals totaled more than $63 billion.[12]

When entrepreneurs need more than $300,000 but less than $3,000,000, individual equity investors (sometimes called angel investors) play a big role.

One policy that led to such a robust individual investor market to fund early-stage EGCs was the significant capital gains tax rate reduction. Before 1978, when founders, managers, employees, individual investors, and even suppliers and customers of entrepreneurial companies cashed out of their investments, they were subject to dramatically fluctuating capital gains tax rates. But after 1978, the fundamental tenet that capital gains on these stock sales should be taxed at rates lower than ordinary income rates started to take hold.[13] Observers say that creating a differential between capital gains and ordinary income rates was instrumental in changing the attitudes of

potential investors—creating a mind-set that successful investments in entrepreneurial companies offered extraordinary returns.

Moreover, the Tax Reform Act of 1986 drastically reduced the number of tax shelter schemes available to individual investors. As those evaporated, individuals' investment dollars sought other high-return opportunities, finding them in venture funds and direct equity investments in entrepreneurial companies. As Greg Gallo—a prominent Silicon Valley attorney—puts it, "The shutdown of many tax shelter opportunities after 1986 and capital-gains-tax rate reductions resulted in more money becoming available for development that continues to this day."[14]

Venture Capital: SBICs, ERISA, and the Business Investment Incentive Act of 1980

Today, even with the downturn in the new economy, venture capital funds are critical to the continued growth of many EGCs. Eighty-one percent of all the world's venture capital is invested in the United States.[15] Venture capital investments reached their zenith in the year 2000 (at the height of the "dot-com boom") when VC firms invested $103 billion in EGCs—a figure higher than the entire gross domestic product of Ireland. But even after the "dot-com crash," the amount of money being invested today by venture capitalists is enormous. In 2001, VC funds invested $31 billion in EGCs—the third highest investment level ever.[16] This return to "normal" levels of VC funding is still extraordinary.

Venture capital funds are also important to EGCs because they set the standard up and down the financial chain as to whether an EGC is investment-ready. Moreover, venture capitalists on EGC boards of directors are often the agents that force the necessary changes to allow the companies to achieve their true growth potential. Finally, at the height of the dot-com boom fully half of all the companies that made an initial public offering (IPO) of their stock were venture-backed.

Public policy played an important role in the growth of venture capital funds in the United States. The first assist came in 1958, in the form of statutory and regulatory authority to create Small Business Investment Companies (SBICs)—a program under the Small Business Administration (SBA).[17] For the first time, banks were allowed to form subsidiaries that would make equity

investments in entrepreneurial companies. The bank was required to start its SBIC with private capital (the minimum is from $5 million to $10 million), but additional capital—as much as three times the private capital—could be provided by the sale of SBA-guaranteed securities. The important financial discipline of the program, insisted on at the program's inception by then Chairman of the Federal Reserve Board William McChesney Martin, is that the claims of private capital would be below those of the government. All private capital invested in SBICs is at first risk of loss before that of the government.

Over the past 40 years, the SBIC program has provided approximately $27 billion of long–term debt and equity capital to nearly 90,000 small U.S. companies, with $5.5 billion invested in 3,060 small businesses in FY 2000 alone.[18] Indeed, many EGCs that later became major U.S. companies received early financing from SBICs, including Intel, Apple Computer, Staples, Federal Express, Sun Microsystems, Sybase, Inc., Callaway Golf, and Outback Steakhouse.

But beyond the SBICs' investments in particular companies, perhaps one of the most important contribution of the SBIC program was to start building the human capital infrastructure for the venture capital industry in the United States—people skilled at the art of risk capital intermediation. Throughout the 1960s and 1970s, SBICs hired and trained the core of profes-

One of the most important contributions of the SBIC program was to start building the human capital infrastructure for the venture capital industry in the United States.

sionals who would later form and operate some of the very first independent, partnership-based VC funds. For purposes of illustration only, consider the "graduates" of just one SBIC (Citibank's) which included: Patrick Welsh and Russell Carson, who later formed Welsh, Carson, Anderson & Stowe; Arthur Patterson, who went to Fred Adler & Co., then helped form Accel Partners;

and Ed Glassmeyer, who went to Oak Partners. When the early private VC industry began to grow, these professionals were prepared to jump at the opportunity.

SBICs also made equity investing in start-up, high-growth companies a respectable calling within the financial community. Before SBICs, few knew what venture capital investing was; SBICs put venture capital into today's national vocabulary.

But the explosion in venture capital did not occur until another small, but critical, change in public policy in 1979. The Employee Retirement Income Security Act (ERISA) was enacted in 1974 to provide more security for the assets of public pension funds and to curb some notorious abuses by certain pension plans. Consequently, public pension funds were banned from investing in venture funds because "the prudent man rule" interpretation under ERISA prohibited them from investing in risky enterprises.

The problem SBIC graduates and others who were trying to start private venture funds faced was that the largest potential source of long-term, patient, equity capital in the economy—public pension funds—did not invest in venture capital as an asset class. Dick Testa, an attorney with the Boston firm Testa, Hurwitz & Thibeault, remembers testifying at the Congressional hearings around the issue and finding that the legislators and their staffs knew little, if anything, about the VC field.

"I had prepared some remarks," he says, noting it was apparent that no one at the hearing knew what was at stake. "I threw out my comments and asked a question. I said 'Has anyone here ever invested in a venture capital fund?' No one had. Then I said, 'Has anyone been in a private placement in which a firm tried to raise money?' No one had." One of Testa's other questions asked if anyone had seen legal agreements dealing with VC deals, and again no one had. "It was clear that very smart people did not know what they were regulating," he says. "That started a dialogue about what was really going on in the venture capital business ... and led to changes and seeing VC as a legitimate business."

Ultimately Testa and others had the impact they wanted. Partly as a result of those Congressional hearings in 1978 and a concurring Small Business Administration task force report, the Department of Labor issued new regu-

lations under ERISA to allow public pension funds to invest a small portion of their assets in high-risk ventures, as part of prudent diversified-portfolio management.[19] The impact of this seemingly tiny change was immediate and enormous. Whereas venture capital funds had raised a paltry $5 million a year from pension funds from 1976 through 1978, they raised ten times that amount—$50 million—in just six months in 1979.[20]

Other regulatory and legislative changes added to the momentum. In 1980, the Department of Labor reversed an earlier ruling and gave venture capital partnerships a "safe harbor" exemption from ERISA's plan asset regulations. Without the exemption, venture funds would have had great difficulty in structuring their partnerships and could incur significant fiduciary risks in accepting public pension funds as limited partners.[21] Also in 1980, the Congress passed the Small Business Investment Incentive Act which made clear that venture capital funds were business development companies and therefore not subject to registration and regulation under the Investment Advisers Act.[22]

All of these changes eventually helped to produce a tidal wave of venture capital investment. Before 1978, funds invested by VC firms totaled about $700 million. After the ERISA modifications, investments by VC funds on an annual basis soared to more than $100 billion by 2000, and most of the venture capital partnership money during the high-growth period came from public pension funds.[23]

Not a single one of them would have met the listing requirements on the NYSE when they went public on NASDAQ. Neither America Online, nor Amazon.com, nor Sun Micro-Systems, nor Genentech, nor Compaq Computers.

Investor Liquidity Opportunities—IPOs and Mergers and Acquisitions: NASDAQ, Tax Law, Accounting Standards and Anti-trust

But merely supplying equity capital to entrepreneurial growth companies is not enough. Investors in EGCs, whether they be individual angel investors or venture capital funds, need liquidity opportunities—ways to liquidate their investments and realize a return on their money. Without the possibility of liquidity, they would make no equity investments in the first place. For EGCs, initial public offerings (IPOs) and sales to or mergers with other companies are the two primary paths to liquidity.

It is startling to realize that roughly 40 years ago, there was no viable public market for the securities of EGCs. This point was driven home recently when the New York Stock Exchange (NYSE) posed what seemed like a routine marketing question to Floyd Kvamme—formerly a founder of National Semiconductor and now a partner in the VC firm of Kleiner Perkins Caufield

& Byers and Co-Chair of the President's Council of Advisors on Science & Technology. NYSE representatives asked why Kleiner Perkins did not list more companies on the NYSE versus on the NASDAQ. Kvamme analyzed all of his firm's portfolio companies that had gone public since the 1970s, and reached a glaring conclusion: not a single one of them would have met the listing requirements on the NYSE when they went public on NASDAQ. Neither America Online, nor Amazon.com, nor Sun Micro-Systems, nor Genentech, nor Compaq Computers.[24]

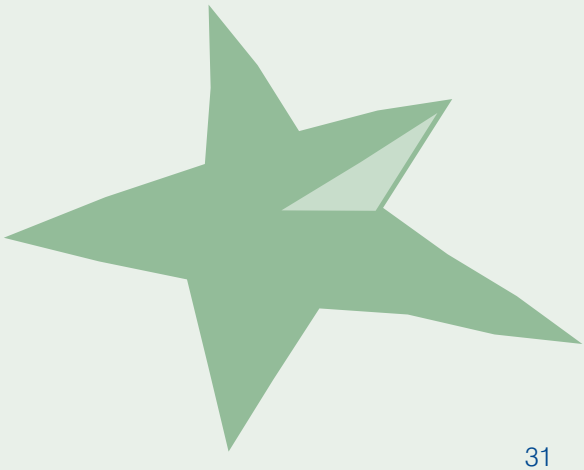
The creation of NASDAQ by the Securities & Exchange Commission in 1971[25] constituted a lynchpin of the financial market infrastructure that funds EGCs. Because EGCs—with intangible assets, no or low earnings, and very short track records—could not meet the strict listing requirements set by the NYSE, NASDAQ gave these EGCs access to an initial public offering market for the first time. "It is hard to go public on the NYSE," Kvamme says, concluding that without NASDAQ, there would have been no IPOs of these companies. "NASDAQ provided an important service of giving us access under a set of rules that allowed individuals to invest in early-stage companies," Kvamme adds.

As the NASDAQ was critical to IPOs, so were tax laws, financial accounting standards, and antitrust regulations critical to the second, and more often used, path to investor liquidity—acquisitions. The tax-free reorganization provisions of the Internal Revenue Code,[26] the treatment of the "pooling" of assets by the Financial Accounting Standards Board (FASB),[27] and the available exemptions from antitrust review under the Hart-Scott-Rodino Act,[28] all made the acquisition of entrepreneurial companies attractive to larger companies. And it was primarily through acquisitions that investors, employees, and suppliers owning stock in entrepreneurial companies realized the accrued value of their holdings.

Cumulatively, these policies and regulation requirements have had a profound impact on the creation of accessible and robust American capital markets, and in turn, on our economic vibrancy, international competitiveness, and innovativeness as a nation. The bottom line is that these policies transformed American capital markets so that the U.S. stood alone among other industrialized nations as the one with an equity capital surplus used to finance the engine of innovation—entrepreneurial growth companies.

2 Providing Research & Development and Intellectual Property Protection for Technologies that Underlie Many Entrepreneurial Growth Companies

In the area of research, development, and technology, contributing federal policies were not implemented exactly as reported in the press. As we all know by now, former Vice President Al Gore was much abused in the 2000 campaign when comments he made were characterized as a claim that he had invented the Internet. But while the creation of the Internet was not the work of one person, the Department of Defense's Advanced Research Projects Agency (DARPA) did in fact fund the early technology requirements in the late 1960s and early 1970s. These technologies produced many of the innovations that in turn created whole new industries in which entrepreneurial companies dominate—including the Internet, once called "ARPAnet."[29]



1952 Current U.S. patent structure

1965 Strengthened patent protection

1969 DOD's DARPA funds early technology requirements

1976 Revision of copyright laws

1980 Bayh-Dole Act

1980 Stevenson-Wydler Act

1980 Computer Software Copyright Act

1982 Single Court for Patent Appeals

1982 14-year term for all design patents

1982 SBIR program

1984 Extension of patent term for FDA delays

1984 Protect semiconductor chips as copyrightable works

1984 Single Board of Patent Appeals

1989 National Competitiveness Technology Transfer Act

1989 Berne Convention on International Copyright

1990 Computer Software Rental Act

1994 Extended patent term to 20 years

1995 Extended patent protection to biotech processes

1996 Digital Millennium Copyright Act

1998 Patent Protection to Business Processes

First Customer for New Technologies: DOD Procurement

Historians remember July of 1969 as a milestone in human and technology history when Neil Armstrong first set foot on the moon. But as Floyd Kvamme notes, "Man would not have walked on the moon without semiconductors." And if it weren't for Defense Department (DOD) advanced specifications for new weapons systems and components, there would have been no semiconductor industry explosion, according to Kvamme. These specifications, coupled with the funding to purchase the new technologically advanced products, drove new developments in technology that became the innovative products of many entrepreneurial companies.

Chief among these was the development of advanced semiconductor chips. Entrepreneurial companies like National Semiconductor, Fairchild Semiconductor, Intel, and many others were founded to produce these chips—for the DOD and commercial uses as well. Their semiconductor chips in turn became the core elements of countless new products brought to market by other entrepreneurial growth companies.

First Funder of New Technologies: DOD, NIH, NSF, and SBIR Research & Development

Alternatively, consider the precursors of the personal computer. As painstakingly detailed in Mitch Waldrop's *The Dream Machine,*[30] DOD research and development and procurement played an instrumental role in developing both the technology and the human capital networks that eventually produced mini-computers, microcomputers, and the personal computer. In fact, the federal government increased its support of research and development in university-based computer science from about $8 million in 1959 to more than $35 million in 1971; in 1963 alone, the federal government paid for fully half of the $97 million spent by universities on all computer equipment.[31] The Advanced Research Projects Agency (ARPA, later changed to DARPA) not only figured prominently in the emergence of personal computer technology but in countless other technologies that produced entirely new industry segments populated by entrepreneurial growth companies.[32]

Government investment in research and development that produced EGC products was not limited to the defense sector. The National Institutes of Health and the National Science Foundation have sustained a program of significant civilian research and development funding during and after the Cold War.[33]

Finally, beginning in 1982, Congress mandated that all federal agencies with extramural research budgets in excess of $100 million allocate a percentage of those research budgets to small business bidders, through the Small Business Innovation Research (SBIR) program.[34] By the year 2000, the federal government was channeling more than $1.1 billion annually to entrepreneurial technology businesses. Examining the $7 billion invested in the

Defense Department research and development and procurement played an instrumental role in developing both the technology and the human capital networks that eventually produced mini-computers, microcomputers, and the personal computer.

program from 1983 to 1997, one analyst determined that EGCs that were SBIR awardees (when compared to non-SBIR firms) "enjoyed substantially greater employment and sales growth" and "were significantly more likely to receive" follow-on venture capital financing.[35]

licensor

Commercial Licensor of New Technologies: Bayh-Dole, Stevenson-Wydler, and the NCTTA

Federal policy combined these technology investments with steps to ensure that the results of its federally funded research and development did not stay in the universities and laboratories but could be developed for commercial use in the private sector. The Bayh-Dole Act (1980)[36] allowed universities doing federally funded research to retain property rights in their research, which they could license to business entities. The Stevenson-Wydler Act (1980)[37] applied similar principles to research conducted at federal government-owned laboratories. And in 1989, the National Competitiveness Technology Transfer Act (NCTTA)[38] extended Stevenson-Wydler provisions, with some modifications, to the Department of Energy National Labs.

University-based research combined with the bold technology-transfer provisions of Bayh-Dole led to the creation of entrepreneurial companies. For example, companies like Genentech and Amgen based their first biotech products on research funded through federal government sources. Jim Barksdale, former CEO of Netscape, is fond of urging the NSF to tout the return on investment of its $7 million investment in a University of Illinois computer research center that eventually produced Netscape—a company that reached a market capitalization of $4 billion and became part of another entrepreneurial company (AOL) that in turn purchased the Fortune 500 giant, Time-Warner.[39]

First Protector of New Technologies: Patents and Copyrights

It is one thing to invest significant public dollars in research and development and to make that research and development available to entrepreneurs for the building of new products and new companies. But it is equally important to have a system to protect intellectual property rights in innovations.

According to attorney Greg Gallo, venture capitalists and other savvy investors will respond to any entrepreneur's touting the innovation that will "change the industry" with, "Tell me how this is protected; I will not even talk to you unless I know that your intellectual property is protected." Investors are reluctant to fund any new businesses that cannot protect their innovations from reverse engineering or copying by competitors. And second, the long development and commercialization cycles of certain EGC products require huge capital investments. In biotechnology, for example, this cycle typically takes ten years and more than $100 million of investment. The temporarily protected markets conferred by patents give EGCs and their investors the returns required to justify the risky and patient capital investments on which those companies depend.

Intellectual property protection started, of course, with the U.S. Constitution's giving Congress the authority to provide patent and copyright protection.[40] The basic structure of the current U.S. patent law was adopted in 1952,[41] and provided that a patent could be issued for an invention that was merely "novel" (reversing the Supreme Court's "flash of genius" requirement) and established a clear standard for infringement.

There followed a series of amendments and court decisions significantly strengthening patent protection, including those that created a presumption of validity for each patent claim (1965),[42] declared that modified bacterium or "anything made by man under the sun" could be patented (1980),[43] established a single court for patent appeals (1982),[44] set a term of 14 years for all design patents (1982),[45] allowed extension of patent terms due to FDA delays (1984 and 1988),[46] created a single Board of Patent Appeals (1984),[47] defined infringement to include acts committed in outer space (1990),[48] extended the patent term to 20 years (1994),[49] extended protection for biotechnology processes (1995),[50] and even extended protection to business processes (1998).[51]

"Tell me how this is protected; I will not even talk to you unless I know that your intellectual property is protected."

A similar catalog of developments could be detailed for American copyright, starting with the full revision of the copyright statutes in 1976 that preempted all previous laws.[52] These new statutes seek to update our laws to protect the technological developments that entrepreneurs were bringing to the marketplace and to prepare for international cooperation on copyright issues. Among other things, the 1976 act: increased the term for copyrights;[53] established a standard for infringement,[54] remedies for infringement,[55] detailed procedures for notice and registration,[56] and a definition for "fair use;[57] and extended coverage to works produced by new technologies, like computer software.[58] This major revision was followed by the Computer Software Copyright Act of 1980, provisions to protect semiconductor chips as copyrightable works (1984),[59] the Berne Convention on international copyright (1989), the Computer Software Rental Act of 1990, and the Digital Millennium Copyright Act of 1996—most provisions of which strengthened the hands of the owners of new intellectual property.

The key issue in designing these intellectual property protections is striking the right balance between incentivizing and rewarding innovation on the one hand and spreading new knowledge that can spur future innovation on the other.

This issue is playing out in new technology areas right now; public policy's latest challenge is intellectual property protection on the Internet. "The Internet is a tool for abuse of copyright," says Roberta Katz, former general counsel for Netscape. "But you can do away with the benefit of the Internet if you do not find the right balance. There is a battle between vested interests versus a new industry that wants to be freer. It will be up to policymakers to find a middle point."

Katz says the Internet has been both a boon to the entrepreneur—everyone becomes a publisher—and a bane of the copyright owner's existence. Consequently, she said, the sheriff—in the form of government and copyright owners flexing government-granted legal muscle—"is starting to show up in the Wild West."

Nonetheless, federal policy has thus contributed capital, technology, and a protection regime to spawn innovations that were brought to market by entrepreneurial growth companies over the last 40 years. By one estimate these EGCs produced over two-thirds of all innovations,[60] and by another estimate, 95 percent of all radical innovations in the economy.[61]

Major Innovations by U.S. Small Firms in the 20th Century

Accoustical suspension speakers
Aerosol can
Air conditioning
Airplane
Artificial skin
Assembly Line
Automatic fabric cutting
Bakerlite
Biosynthetic insulin
Continuous casting
Cotton picker
Fluid flow meter
Frozen foods
Fosin fire airinguisher
Geodesic dome
Gyrocompass
Heart valve
Heat sensor
Helicopter
High capacity computer
Hydraulic brake
Piezo electrical devices
Prefabricated housing
Pressure sensitive cellophane
Rotary oil drilling bit
Safety razor
Soft contact lens
Six-axis robot arm
Spectrographic grid

Source: Jeffrey A. Timmons, New Venture Creation (5th Edition), (Boston: Irwin-McGraw Hill, 1999), p. 10.

3 Investing in Technically Talented People and Enabling Them to Move to Entrepreneurial Growth Companies

The Risk-Reward Calculation: Stock Options, Stock Ownership, Accounting Standards, and Bankruptcy Law

Entrepreneurs are often viewed as wild risk takers; in fact, one key to the success of most entrepreneurs is to convince other people to share the risk of the enterprise with them.[62] Those people include important suppliers like landlords, lawyers, accountants, and consultants. Sometimes they include customers for the company's first, unproven products. But most importantly, they include the key employees of the company—experienced managers and marketers and expert product development and production staff.

1958 National Defense Student Loan Program

1960s NSF programs to fund engineering and science in universities

1964 Creation of Employee Stock Purchase Plans (ESPPs)

1965 Elementary and Secondary Education Act

1972 Pell Grants

1974 Creation of Individual Retirement Accounts (IRAs)

1974 Creation of Employee Stock Ownership Plans (ESOPs)

1978 Liberalization of bankruptcy system

1978 Revenue Act cuts capital gains rates

1981 Creation of Incentive Stock Options (ISOs)

1986 COBRA Protection

1988 Expansion of H1-B visa availability

The critical question is whether an EGC can offer a risk-reward trade-off good enough to convince key employees to leave stable, well-salaried jobs with excellent employee benefits at larger, more established companies. Can they convince a potential employee that his future share of the new value to be created by the EGC (in stock holdings) may be so big that it makes the risk well worth taking?

Here, too, federal policy over the last 40 years helped create a national environment conducive to entrepreneurship—this time, by maximizing the reward for taking risk. Above all, public policy provided tax-favored ways to spread stock ownership in entrepreneurial companies among employees and contractors. For example, in 1981 Congress enacted incentive stock option (ISOs). This legislation allowed EGCs to issue options at the very low fair-market-value prices typical of the early-stages of an EGC's growth. It provided that no employee would face tax liability when exercising the options, and that the employee would only pay capital gains tax rates on the eventual sale of the optioned stock.[63] Similarly favorable tax treatment accrues under other code provisions relating to the creation and maintenance of Employee Stock Purchase Plans (ESPPs)[64] and Employee Stock Ownership Plans (ESOPs).[65]

2001 Snapshot of Options and High-Tech Entrepreneurial Growth Companies*

Number of Companies Surveyed	275
Percent providing options to ALL employees	77%
Percent providing Incentive Stock Options (ISOs)	82%

**Companies surveyed by Advanced-HR, Inc. were: venture-capital-financed; in the computer, e-commerce and communications industries; and employing mostly 20 to 100 employees.*

Moreover, the Financial Accounting Standards Board (FASB) did not require that the value of EGC stock options be charged against the earnings of the company upon the granting of the option.[66] This meant that the EGC paid no marketplace penalty, when compared with other companies, for using stock options as a way to recruit talented employees and contractors. At the time of their IPOs, for example, entrepreneurial companies' earnings were not depressed because of company-wide employee stock option programs, in comparison with other companies that did not offer or include large numbers of employees in stock option plans.

But starting in the mid-1980s, FASB proposed changes to this ruling, and a political battle ensued. In 1995, FASB elected not to change the rule, after all, but instead required some additional disclosure of outstanding employee stock options.[67]

The widening disclosures of Enron's, WorldCom's, and other corporate misrepresentations recently have focused national attention on, among other things, the use of stock options as part of excessive executive compensation packages in larger, publicly traded companies. As Congress, the SEC, FASB, and the stock exchanges seek to prevent these abuses in the future and to restore investor confidence in our system of financial disclosure, changes will occur. How broad these changes will be and how they will affect EGCs remains to be seen, as both citizens and markets respond.

Policymakers also took steps to minimize the downside risk of starting or working for an EGC. The 1978 liberalization of the bankruptcy system reduced the cost of failure for entrepreneurs via Chapters 11 and 13 of the U.S. Bankruptcy Code. They limit creditors of failed entrepreneurial businesses to the assets of the company, unless specific personal security has been demanded and received by a creditor.[68] The bankruptcy laws do not impose the stigma of failure that entrepreneurs must endure in countries with more punitive bankruptcy regimes.

Moreover, changes in federal bankruptcy laws have allowed individual states to protect entrepreneurs; in Arizona and Florida, for example, you can't lose your house to corporate creditors. "It's good to be an entrepreneur in those places," notes Vip Patel, long-time Silicon Valley entrepreneur and now CEO of another EGC, ehealthinsurance.com.

Encouraging the Mobility of the Workforce: COBRA, Defined-Contribution Plans, and Employment Agreement Law

Forming EGCs is only half of the battle, according to Patel. A native of India who previously worked for Silicon Graphics with Jim Clark, Patel argues that other public policies have helped to reduce the risk for rank-and-file employees' going to work for EGCs.

For example, COBRA protection has reduced the health insurance risk of moving from one employer to another. This 1986 change in the law allowed former employees of a company to continue to subscribe to that employer's health insurance program for 18 months after leaving the company.[69] That step made it much easier for employees to leave larger, well-established companies with significant health insurance programs and join smaller, entrepreneurial companies.

The development of defined-contribution plans also increased the ease with which employees could move from company to company. Prior to the enactment of the Revenue Tax Act of 1978,[70] employees risked not having any pension if they left a large employer for whom they worked for several years. By allowing employees to participate in defined contribution plans, to vest with those plans quickly, and then to roll them over into similar plans to which future employers could contribute, the financial costs of moving to a new EGC dropped. The creation of Individual Retirement Accounts (IRAs) in 1974 provided yet another way to make pension savings portable.[71]

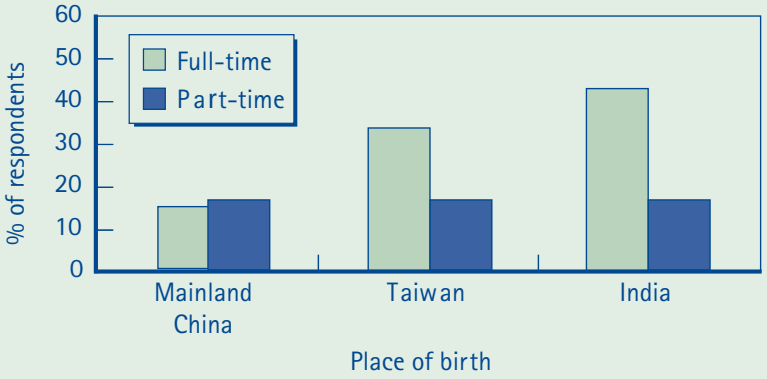
Finally, another policy change that directly affected critical components of the EGC workforce was the reinterpretation of non-compete clauses. These provisions of employment agreements with large companies provided that key employees could not leave to work for competing businesses. In fast-moving technology industries and emerging entrepreneurial regions like Silicon Valley, these agreements essentially prevented employee movement from company to company. Thanks to the intervention of the courts interpreting state laws,[72] these provisions were effectively nullified. Key decisions provided only that employees could be prevented from disclosing a previous employer's proprietary information; otherwise, they were free to leave one company on Monday and join a potential competitor on Tuesday.[73]

A Technologically Trained Workforce: Student Aid, Research & Development Funding, Immigration Law

Not only did federal public policy encourage the existing workforce to switch from larger, more established companies to EGCs, but it also helped increase the supply of employees to meet their growth goals.

Through initiatives like the National Defense Student Loan Program and Federal Pell Grants,[74] the federal government encouraged more students to go to college. Moreover, NSF programs in the 1960s and 1970s channeled significant new dollars to the engineering and science programs of major universities throughout the country, encouraging students to major in these subjects.[75] New federal research dollars from the Defense Department and NIH during the same period further beefed up science and engineering faculties, the numbers of graduate students in the programs, and opportunities for post-doctoral fellowships.[76] This new funding allowed universities to develop entirely new curricula to meet the needs of newly emerging technology industries.[77] And finally, the Congress laid the groundwork to support student improvement in K-to-12 grades by enacting the first Elementary and Secondary Education Act in 1965.

Percentage of Immigrant Professionals Involved in Founding or Running a Start-Up Company in Silicon Valley



Source: Public Policy Institute of California, Research Brief, April 2002

Federal policies have not just assisted home-grown workers; they also encouraged the world's best and brightest to come to the U.S. Immigration law encouraged foreign engineers and scientists to study and work in the United States. The most recent example has been the expansion of the number of H1-B visas available to technologically trained workers. When the expansion of the U.S. economy hit its apex in 1999, EGCs and other technology companies screamed out for an increase in H1-B visa recipients just to meet their burgeoning workforce needs, and federal lawmakers quickly responded.[78]

We can take one measure of the impact of these immigration rules on the entrepreneurial economy by noting the 1998 findings of Professor Annalee Saxenian. She determined that almost a third of all high-technology businesses started in Silicon Valley between 1995 and 1998 were run by Chinese-born or Indian-born engineers, and in 1998 their companies employed more than 58,000 people and had sales of almost $17 billion.[79] Moreover, a 2001 Saxenian study shows that Chinese and Indian immigrants to Silicon Valley form a vast pool of entrepreneurs. More than half of the immigrants who had been in the U.S. less than ten years had founded or run a start-up company.[80]

The set of American public policies that both invested in a technologically trained workforce and simultaneously encouraged that workforce to forsake the comfort and security of large corporate America may be unique among the nations of the world. At a minimum these policies reinforced an emerging entrepreneurial culture in areas like Silicon Valley and Route 128 that put a high value on risk-taking, reward-sharing, and career paths that anticipated many employers over one's lifetime.[81]

4 Opening New Market Opportunities and Easing Entry for Entrepreneurial Growth Companies

Entrepreneurs create and identify opportunities presented by new technologies that in turn create new industries. At the dawn of these new industries, there are few barriers to entry deter entrepreneurs (and their investors) because there are no large, existing companies that dominate the markets or the distribution and communication channels to these markets.

Deregulation and New Market Opportunities: UCC, Air Cargo and Airline Deregulation, Motor Carrier Act of 1980, FCC Decisions, AT&T Consent Decree, and the IBM Consent Decree

Public policy has also broken down barriers to entry in existing industries and in existing domestic markets. In fact, the forty-year period studied in this report opened with a remarkable achievement in providing entrepreneurial growth companies with full access to the entire domestic American market.

The adoption of the Uniform Commercial Code (UCC) by the states, completed in 1964, made it easier for entrepreneurs to conduct business in all 50 states. Without

1947 General Agreement on Tariffs and Trade (GATT)

1956 IBM Consent Decree

1964 Adoption of UCC by all states

1968 FCC's Carterphone decision

1969 MCI decision

1977 Deregulation of air cargo

1978 Airline deregulation

1980 Motor Carrier Act

1984 Break-up of AT&T

1986 GATT Uruguay Round begins

1993 NAFTA

1994 Establishment of WTO

1996 Telecommunications Act

1997 Basic Telecommunications Services Agreement

1998 APEC Mutual Recognition Agreement

1999 Financial Services Agreement

the code's adoption, entrepreneurs would not have been able to afford cost-effective access to the huge American domestic market that has been so critical to American EGCs' success. Through the adoption of the UCC, the American market in all respects became a single, cost-effectively navigated market open to entrepreneurs around the country.

But perhaps no set of public policies had a greater effect on opening new domestic market opportunities for EGCs than the deregulation of certain large and important industries.

The story of Federal Express tells the tale of how deregulation gave birth to new package delivery companies. Federal Express was founded by Frederick W. Smith, Chairman and President in June 1971, and officially began operations on April 17, 1973, with the launch of 14 small aircraft from Memphis International Airport. On that date, Federal Express delivered 186 packages to 25 U.S. cities. Now the company delivers more than 3 million packages each day, world-wide.

Although the company first showed a profit in July of 1975, it was only with the deregulation of air cargo in 1977 that Federal Express embarked on its accelerated growth path by being able to use larger aircraft, such as Boeing 727s and McDonnell-Douglas DC-10s.[82] Thereafter, it soon became the primary carrier of high priority materials in the marketplace and has since set the standard for the industry it established.

Entrepreneurial companies also took advantage of the Motor Carrier Act of 1980, which deregulated the trucking industry. Under that act, trucking companies were authorized to serve all points and places in the United States. In the first year after deregulation, the number of carriers more than

But perhaps no set of public policies had a greater effect on opening new domestic market opportunities for entrepreneurial growth companies than the deregulation of certain large and important industries.

doubled, and shortly thereafter annual growth rates for trucking companies reached 30 percent and higher.[83]

The airline deregulation that culminated in 1978 gave birth to host of new companies.[84] Perhaps one of the most successful of these is Southwest Airlines, which was conceived—epic-like—on the back of a napkin. Today Southwest Airlines has a market capitalization greater than combined market capitalization of the top four other U.S. airlines.[85] And Southwest was easily the most successful American airline in the months immediately following the terrorist attacks of September 11, 2001, actually posting a 14 percent profit increase for the fourth quarter of 2001.

In one of the most important industries for EGCs—telecommunications—deregulation first came from Federal Communications Commission decisions and then from anti-trust case decisions by federal courts. The FCC's Hush-a-Phone and Carterphone decisions of 1956 and 1968, respectively, began to erode the monopoly of AT&T, and then the FCC's MCI decision explicitly opened the way for Bill McGowan and his cofounders to start MCI, Inc.[86] MCI's success encouraged tens of other entrepreneurial companies to enter the long-distance phone business. Thereafter, Judge Green's decision to break up AT&T in 1984 opened up huge new markets to EGCs. As new technologies were developed to produce new products for a much more open and competitive telecommunications marketplace, still more EGCs were started. McCaw cellular was one of the early leaders in the mobile phone business, and its success prompted others to enter markets across the country with new services. And the success of these companies in turn produced a demand for new mobile phone sets and accessories, which still other EGCs were founded to meet.

In information technology industries, deregulation was not as important. New technologies drove that marketplace almost entirely, with new products and services—and thus new industry sectors—springing forth almost monthly. But we should note that anti-trust protection did play a minor role in making the industry safe for EGCs. The IBM Consent Decree of 1956 required IBM to sell its machines as well as lease them and to provide service and sell parts for IBM computers after they were no longer owned by IBM.[87] This created a market in used equipment that competed with IBM's new machines and limited its monopoly power in the computer market. In turn, entrepreneurs created new computer and computer services companies to compete with IBM as sellers in a more open information technology marketplace.

Trade Expansion and New Market Opportunities: GATT, WTO, NAFTA, and Other Trade Agreements

Public policy over the last 40 years opened up new market opportunities for EGCs not just in American industries, but in foreign industries as well—through aggressive trade expansion policies. Although American entrepreneurs are blessed with the largest domestic market in the world, markets in Asia and Europe offer a huge potential bounty.

The catalog of trade initiatives pursued by the American government over the past 40 years is long. The global agreements that set the stage include the General Agreement on Tariffs and Trade (GATT) as early as 1947, followed by the later "Uruguay Round" of GATT, and the establishment of the World Trade Organization (WTO) in 1994. And the government negotiated regional and sector specific agreements in the 1990s, such as the North American Free Trade Agreement (NAFTA) (1993), the Basic Telecommunications Services Agreement (1997), the Financial Services Agreement (1999), and the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Agreement for Conformity Assessment of Telecommunication Agreement (1998).

All of these sought to open new markets overseas to American businesses with the promise of an open and more competitive market in the U.S. Although some of these initiatives may have injured the competitive position of some EGCs in the U.S. by opening the American market to foreign competitors, the consensus certainly in high-tech industries is that on the whole such trade expansion initiatives benefit most entrepreneurial companies.

The deregulatory thrust of public policy gave America's entrepreneurs an edge over potential international competitors. Why, for example, did the technological advances in other nations (Japan, Germany, Britain, and France, for example) over this same period not produce new companies like the ones that now dominate so many industry sectors in the United States? Certainly one answer has to be that they had no comparable deregulation and antitrust policies that explicitly encouraged the entry of entrepreneurs and their companies into vitally important lines of business.

5 Establishing a Robust and Dependable Infrastructure

A Robust Physical, Environmental, Educational, Cultural, and Recreational Infrastructure

Small but growing companies need cost-effective and speedy access to customers and suppliers; they need to communicate quickly with them; and they need to deliver to them, and receive from them, the goods and services at the core of their businesses. It is hard to overestimate the value of the public policies that created and maintain the federal interstate highway system, the national port (air and sea) system,[88] the airline and package-delivery systems,[89] and the telecommunications/wireless and Internet infrastructure on which entrepreneurs rely so heavily for that speedy access at a reasonable cost. The federal government's role in setting the digital standards and protocols that made the Internet the backbone of an entirely new, worldwide communications and commerce infrastructure is a remarkable story.[90]

1944 G.I. Bill of Rights (WW II)

1952 G.I. Bill of Rights (Korea)

1956 Federal Highway Act creates Highway Trust Fund

1958 National Defense Education Act

1965 First Higher Education Act

1966 G.I. Bill of Rights (Vietnam)

1969 Tax Reform Act

1970 Clean Air Act

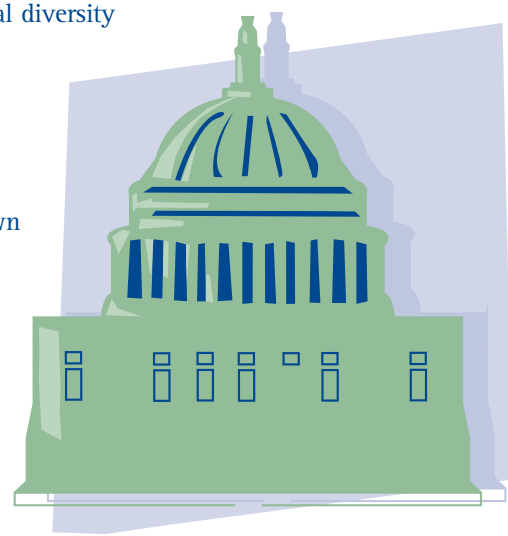
1977 Clean Water Act

1991 Intermodal Surface Transportation Efficiency Act (ISTEA)

1998 Latest Reauthorization of Higher Education Act

Moreover, EGCs must be able to attract the best and brightest managers and top technical employees from larger, well-established companies in order achieve their growth objectives. As documented by recent studies, a community's physical, environmental, educational, cultural, and recreational infrastructure often determines whether an EGC in any particular region of the country can recruit and maintain these critical personnel.[91] Major environmental legislation enacted during the last 40 years, including the Clean Air Act of 1970[92] and the Clean Water Act of 1977,[93] has worked to upgrade environmental quality throughout the nation and to remove the competitive disadvantages of the most environmentally stressed urban or suburban regions. A legacy of recreation-promoting statutes[94]—creating National Recreation Areas, Wild and Scenic River Designations, Wilderness Areas, and the like—began spinning a web of federal and state-supplemented recreational opportunities that continue to attract skilled, creative, and innovative employees to EGCs in regions blessed with these opportunities.

Finally, the G.I. Bill of Rights,[95] the National Defense Education Act of 1958,[96] the subsequent authorization and reauthorizations of the Higher Education Act,[97] and the huge increase in university support from the National Science Foundation,[98] all helped to upgrade the capabilities of the nations colleges and universities—private and public, state universities and land-grant system schools, medical schools and research centers. They helped to build a higher education system almost universally considered the best in the world. Moreover, these institutions often play the roles of cultural center, new idea protector, haven of cultural diversity within a community, and, in some cases, incubator of new businesses. For example, the Bayh-Dole Act[99] helped research universities and colleges to work with businesses, including EGCs founded by their own faculty members.



Not the Ending Point: A Virtuous Cycle of Wealth Creation & Reinvestment

Accustomed as we are to focusing on the new jobs, innovation, and economic growth driven by EGCs, we sometimes fail to note that they create new wealth in our communities. When investors—located around the world—buy the stock of the founders and employees of an EGC after a successful IPO or pursuant to the terms of a merger or acquisition, they enrich the community in which the company is located. The legendary example of this phenomenon came in 1999 when 7,000 of the employees of Cisco Systems, Inc. had become millionaires.[100]

Federal public policy has also encouraged entrepreneurially-created wealth to be reinvested in the nation's communities. Although private foundations date back more than 100 years when entrepreneurs like Andrew Carnegie and John D. Rockefeller formalized their philanthropic spirit by using their wealth for the greater, public good,[101] it was not until 1969 that Congress formally addressed the status of private foundations in the Internal Revenue Code.[102]

In the Tax Reform Act of 1969, Congress first structured the tax-favored manner in which private foundations could receive and disburse money for charitable purposes. Then in 1981, Congress set the annual payout rate requirement at five percent of annual asset value.[103] And in 1984, Congress allowed foundations to reduce their excise tax from two percent to one percent under certain newly identified circumstances.[104]

Federal policy not only afforded public charities and private foundations favorable tax treatment, but Congress also enacted provisions encouraging people to give money and property of value to such organizations. For contributions to public charities, donors may deduct contributions of up to 50 percent of their adjusted gross income for gifts of cash and ordinary income property or up to 30 percent for gifts of capital gain property.[105] For contributions to private foundations, donors may deduct contributions of up to 30 percent of their adjusted gross income for gifts of cash and ordinary-

Accustomed as we are to focusing on the new jobs, innovation, and economic growth driven by entrepreneurial growth companies, we sometimes fail to note that they create new wealth in our communities.

income property or up to 20 percent for gifts of capital-gain property.[106] And in 1984, Congress allowed more liberal deductibility of gifts by living donors to private foundations.[107]

Of the top 100 American foundations today, entrepreneurs (or their descendants)—including Ford, Carnegie, Rockefeller, Lilly, Packard, Getty, Johnson, Kellogg, Gates, and Kauffman—founded 68 percent. In 1950, there were about 2000 foundations.[108] In 1980, the United States was home to 22,088 foundations.[109] In 1996, the number of foundations in America grew to 41,588, who collectively gave $13.84 billion to various recipients.[110] Three years later, the number of foundations grew to more than 46,000.[111]

So not only has federal policy encouraged the start-up and growth of EGCs, it has also contributed to a virtuous cycle in which the new entrepreneurial wealth is reinvested in our communities.

The Policy Challenges of the Future

The implications of the policies identified by NCOE's focus groups of entrepreneurial leaders are profound. The long-term stakes for America are to advance and improve upon the American formula for growth through entrepreneurship. This will sustain and accelerate the entrepreneurial innovative economy and society, and thus perpetuate our international competitiveness and protect our national security. In the short-term, these findings should help shape our policy priorities, structure our policy debates, and focus us on new players to be included in the policymaking process at the regional, state, and federal levels.

So what questions does each of these five major public policy areas raise for America's future?

The first and foremost important task before policymakers in the future is to follow a version of the Hippocratic Oath—to do no harm to the existing federal policy framework from which entrepreneurs, and the nation, benefit. To do no harm, policymakers need to understand how the policies of the past have worked for entrepreneurs and be on the constant alert for inadvertent damage caused by well-intentioned legislation or regulation that would weaken the established public policy framework. It requires a delicate and gentle hand in a subtle but complex process of policy creation. It requires an acute awareness that the Heisenberg uncertainty principle works too in the world of legislating, and that we must take great care to avoid the law of unintended consequences. For example, would a particular reform to our bankruptcy law unreasonably choke off a start-up entrepreneur's access to credit card capital?

The second task is to take on new challenges related to the five major public policy contribution areas that can actually do some good by accelerating and

lubricating the entrepreneurial economic engine. Policymakers should note that for entrepreneurs, the best role for government is to set up the "rules of the game" at the macro-level and not to focus on program services at the micro-level. Public policy's major contributions to the entrepreneurial economy set up these rules of the game—the set of rights, responsibilities, incentives, and discouragements that influence certain economic behavior. Generally speaking, they did not consist of programs that provide funding or services directly to entrepreneurial companies. Such programs have too often resulted in companies' continued dependence on subsidies by substituting political imperatives for market imperatives.

Public policy is most effective when it:

- fosters institutions (NASDAQ, SBICs) that are based on private capital as first risk-takers and are privately run;
- increases investor confidence in the integrity of self-regulatory mechanisms (FASB, GAAP, NASDAQ);
- invests in important, long-term institutional research and development, including basic research, that businesses will not do on their own (NIH funding);
- clarifies who owns what property and thus who has the incentive to exploit it commercially without conflict of interest (Bayh-Dole, patent and copyright law);
- uses its uniquely governmental prerogatives (the power to tax, regulate immigration, procure goods and services for itself) to encourage the formation and growth of entrepreneurial companies (favorable capital gains tax rates on EGCs, tax-favored stock options plans, H1-B visa program);
- uses its trade negotiation powers and statutes regulating domestic commerce to enhance market opportunities for EGCs generally (trade expansion, industry deregulation, vigorous competition policy); or
- provides the physical, education, cultural, and recreational infrastructure that supports all businesses but that is especially valuable to start-up and growing companies.

The sheer scope of these public policy dimensions affecting entrepreneurship suggests one over-arching future challenge for policymakers. Should not someone in the policymaking structure be charged with monitoring progress

on all these fronts? Who tracks developments, asks how proposed legislation or regulation is likely to affect entrepreneurs, or leads an effort to shape policy responses to the specific challenges facing the entrepreneurial economy?

In 2001, the United States Senate made significant progress on this front by renaming and expanding the jurisdiction of its standing committees, formerly the Small Business Committee and now the Senate Committee on Small Business and Entrepreneurship. The Executive Branch and the House of Representatives would also do well to consider how they should structure such a function. Moreover, many observers believe that the government data available to policymakers regarding the entrepreneurial economy are dated, incomplete, and off-target. Making policymakers in all branches of government keenly aware of the role EGCs play in the economy and how the policies they create and implement affect these companies would go along way to build upon the legacy of the last 40 years.

The specific policy challenges described below emerge because entrepreneurs face new obstacles and also because other countries are working hard to build entrepreneurial economies that are more competitive with the United States.[112] We must continue to modify the American formula for growth to meet changing market and societal needs will face, while also recognizing that other countries will develop and adapt their own formulas for entrepreneurial economic growth. To maintain our status as the most successful entrepreneurial economy in the world we must meet the following policy challenges.

confidence

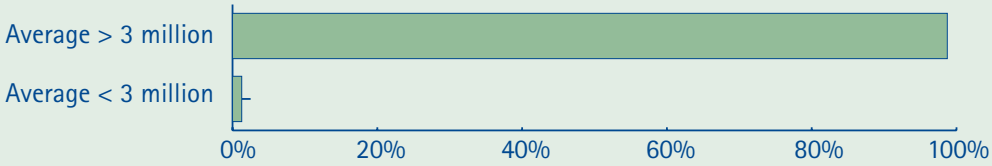
1. Challenge of Maintaining, Expanding, and Inspiring Confidence in Capital Markets to Finance EGCs

EGCs face a growing seed or early-stage capital gap. By marshalling all their sources of bootstrap capital, entrepreneurs can usually raise up to $300,000, but on average the smallest investment venture capitalists are willing to make is about $3,000,000. To make matters worse, only 16 percent of all venture capital goes to seed and start-up stage companies today, whereas 43 percent went to those companies in 1983 and a good 30 to 40 percent was similarly invested as late as the mid-1990s.[113] The problem becomes even more acute during the down cycles of the volatile IPO markets. As of this writing the IPO markets have been close to dead for almost two years, which is the equivalent of putting a moratorium on the entire EGC cycle and process. The flow of all venture capital has slowed considerably, reducing the amount of venture

capital available to seed-stage and start-up companies to close to nothing.

To fill the financing gap between $300,000 and $3,000,000, there are typically two sources on which to draw—EGC stock purchases by individual

Allocation of U.S. Venture Capital by Average Investment Size, 2001



Source: National Venture Capital Association, Venture One, 6/30/02

wealthy investors (angels) and the reinvestment of early profits from the EGC's business.

ACTION AGENDA

- ☑ Fill the capital gap by using tax policy, securities regulation, and pension law to increase the pool of individual investors who will consider investments in EGCs or to free up more of EGC company earnings for reinvestment.
- ☑ In response to the Enron scandal, make the necessary legislative adjustments to ensure the integrity of the financial and accounting information so critical to the confidence of the investor markets on which EGCs depend.
- ☑ Revise the tax code to allow the reinvestment of more of the early profits to nurture rapidly growing companies.

2. Challenge of Increasing Research & Development and Balancing Intellectual Property Protection for New Technologies that Underlie Many EGCs

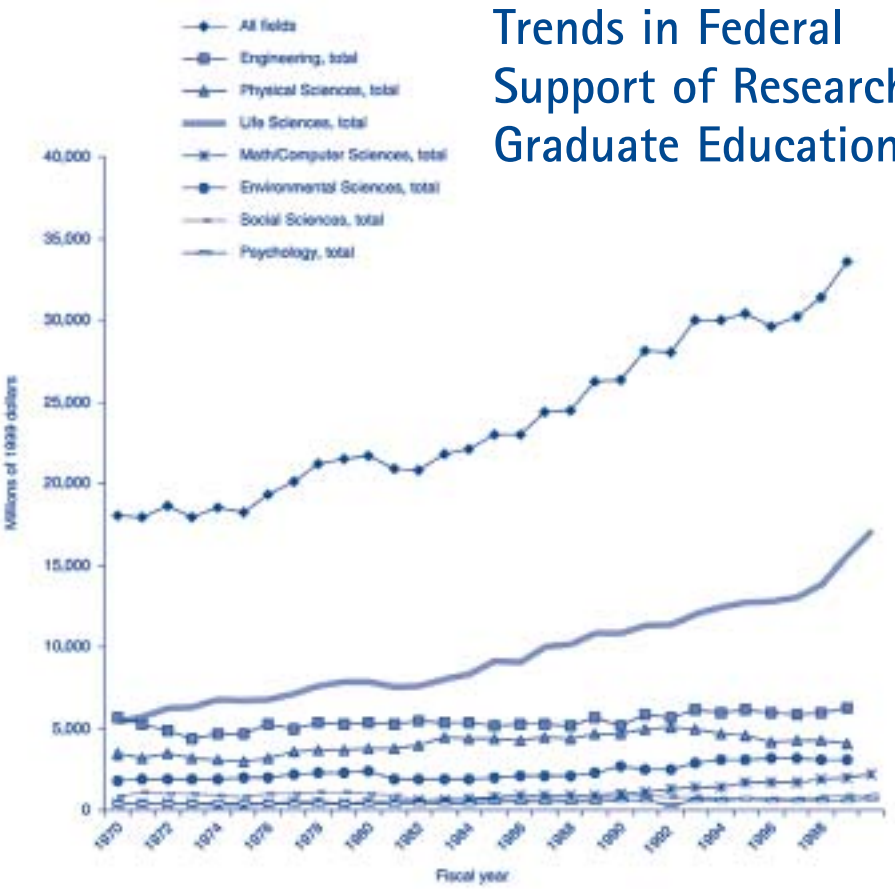
While public funding for new research in the life sciences (primarily through NIH) has increased over the last decade or so, public investment in the physical sciences has dropped dramatically.[114] In particular, Department of Defense funding for science and technology has declined more than 25 percent, and the chasm between basic and applied research has grown deeper and wider.[115] Similarly, the Defense Department's procurement policy does not support emerging, capital-intensive technologies, as it did in the era of the development of the major American semiconductor companies. Increasing research and development in the physical sciences in parallel with the life sciences is especially important in an era when new technology products will need to integrate breakthroughs across the science spectrum. Take for example, new products and services emerging from the bio-informatics field, which combines development in life sciences with those in the physical sciences.

Moreover, notwithstanding the technology-transfer authority given the nation's research universities, few universities seem to have used it to help create EGCs. With the exception of a tiny handful of universities like Stanford and MIT, the record of American universities in supporting the creation of new companies is abysmal. While Stanford and MIT each spin off 20 or more new companies a year, the remaining research universities create fewer than an average of two per year.[116]

Various national security agencies have created their own venture capital investment arms to fund those technologies with defense importance and sensitivity.[117] As these investment programs proceed, what impact will they have on the dissemination of new technologies? Will technologies with a small yet critical national security relevance, but also a large commercial potential, be hoarded, similar to certain bandwidth frequencies?

Finally, there is increasing concern that the pendulum of intellectual property protection has swung too far toward protecting established technologies. Similar concerns are now voiced about copyrights, especially in the Internet context.[118] The fear is that entrepreneurs may be facing unfair market dominance by large established companies using their intellectual property rights as a sword to raise the costs of entry by EGCs.[119]

Trends in Federal Support of Research Graduate Education



Source: The National Resource Council, Federal Obligations for Research, Total and Broad Field FY 1970-FY 2000, (in constant dollars) Stephen A. Merrill, Editor, 2001

ACTION AGENDA

- ☑ Prioritize federal spending to increase funding for R&D in the physical sciences in parallel with the nation's life sciences investments.
- ☑ Ensure that some of the government's resources support applied as well as basic R&D.
- ☑ Provide incentives to more universities to use technology transfer to encourage new entrepreneurial growth companies to exploit new ideas produced by federally sponsored, university-conducted research.

- ☑ Establish procedures to resolve the potential conflicts of interest that arise with national security agency-sponsored venture arms.
- ☑ Right the balance on intellectual property protection to spur entrepreneurial innovation.

3. Challenge of Investing in Technically Talented People and Enabling Them to Move to EGCs

Challenges arising in this area are really two-fold: first, the challenge to increase the talent pool itself and second, to continue to enable this talent pool to move toward entrepreneurial growth companies.

Significant progress has just been made in bolstering the federal commitment to upgrading the general workforce. In enacting the new education bill,[120] federal policymakers have taken big steps forward to support education reform principles championed by entrepreneurs: (1) establishing standards and assessment mandates in core subjects; (2) increasing the amount of competition in the education marketplace by significantly adding resources and flexibility for charter schools; and (3) upgrading the quality of teaching in our primary and secondary schools. Successful implementation of the bill at the state and local level will not be easy.

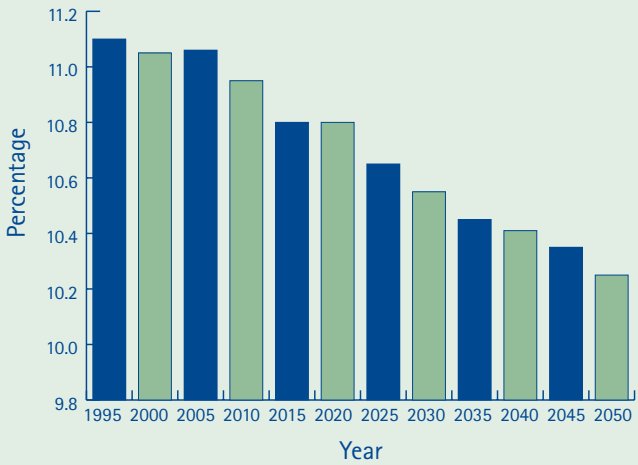
But successful implementation at the local level is critical, because the challenge is enormous. A 2001 study of high school seniors in southwestern Pennsylvania (an area with "good" schools by reputation) measured the three foundation skills strongly correlated to effectiveness in the workplace—reading, math, and graphical interpretation. The study concluded that 15 percent of these ready-to-graduate students did not have even the minimum skills needed for the vast majority of jobs, and another 25 percent had skills levels that would limit them to jobs with median annual incomes of between $15,000 and $25,000. That means that fully 40 percent of high school graduates (not school drop-outs) would not be skilled enough to get jobs with incomes sufficient to support a family.[121]

While this education bill is being implemented, federal policymakers need to turn to the next big talent pool issue: the drop in American physical science and engineering graduates relative to demand. Stanford Professor Paul Romer argues persuasively that the quantity of scientists and engineers is the key input into the American innovation system. He further contends the

percentage of American undergraduates receiving science and engineering degrees is about half of what it should be to meet the needs of the system.[122] Without correcting this deficiency, the nation will "under-power" its entrepreneurial economy and not enjoy the economic growth rates of the past century.

The mobility of the workforce—employees' ability and willingness to move from larger, more established companies to EGCs or to start out working for an EGC—remains an issue. Application of the alternative minimum tax to tax-favored Incentive Stock Options over the last 10 years has significantly reduced the appeal of one of the most effective vehicles for luring talented employees to EGCs.[123] And although the Financial Accounting Standards Board (FASB) in the U.S. decided in 1995 to maintain its favorable treatment for entrepreneurial company employee stock options, that treatment is now under serious review, in the debate over the use of stock options to create excessive executive compensation packages in the Enron, WorldCom, and other corporate situations. The International Accounting Standards Board (IASB) is also considering this issue.[124]

Percentage of 22-year-olds that Would Earn S&E Bachelor's Degrees by Year*



**The percentages were calculated using the U.S. Census population projections.*

Finally, we have not achieved the full portability of what are now employee benefits. While we have made progress on pension portability, much is still left to be done. Policymakers have also taken mini-steps toward a portable life-long learning system,[125] but not yet sparked the development of a national system of personal training accounts.

And today most workers receive health care insurance from their current employers. COBRA protection certainly helps, but it doesn't help the 40 million Americans without health insurance who might want to work for an EGC; nor does it help a start-up EGC that has not yet developed sufficient cash and organizational resources to launch its own plan. Most EGCs develop comprehensive employee benefit plans only when they are beyond their start-up and early stages of growth.

ACTION AGENDA

- ☑ Federal policymakers need to provide state and local officials with the support they need to implement the new K-to-12 education act successfully. Establish incentives, even "success fees," to attract talented students to math, science, and engineering majors.[126]
- ☑ Provide additional incentives to colleges and universities to produce the number of graduates in science and engineering necessary to fuel the entrepreneurial economy.
- ☑ And if we reform our immigration laws, ensure that any shortfalls in the pool of scientists and engineers are made up with qualified immigrants.
- ☑ Create a non-punitive system for EGCs' broad-based employee stock option programs by reforming the alternative minimum tax. Ensure that FASB's decision on accounting for stock options in the post-Enron era will not affect EGCs' ability to attract and retain key employees. Make our pension, training, and health care systems as fully "portable" as possible so that start-up EGCs can compete in these areas with larger employers.

4. Challenge of Opening New Market Opportunities and Easing Entry for EGCs

Increasing access to global markets will become more and more important to American entrepreneurial growth companies in the years ahead, especially as other developed nations begin to compete even more intensely in new products and new services.[127] Federal legislative authority and sustained administration efforts to open new markets for entrepreneurs are critical. Moreover, the Department of Commerce and the Foreign Commercial Service should intensify their initiatives to support the development of EGC capacity to trade overseas.

Opening and maintaining competitive opportunities for EGCs in domestic markets will continue to be an important objective. Telecommunications policy and Federal Communications Commission decisions will determine the extent of the opportunity new EGCs will have in telephone, satellites, cable, wireless, Internet, and all communications industries.[128] It is probably too early to sort out the consequences of the Internet/Telecom boom and bust of 1998-2001. Certainly the Telecommunications Act of 1996 had a significant impact on the structure of the industry—intended or not. And whether policymakers should take further steps to deregulate and enhance competition in the industry will be an important question over the next five years.

Federal policy regarding energy deregulation will have a profound effect on entrepreneurial company potential in this huge sector of the economy, now generally dominated by local monopoly utility companies.[129] Anti-trust policy continues to play a key role in the deciding the future of EGCs in the information technology industry—the Microsoft case being the most well known example. A host of other issues, including privacy and Internet security, will be resolved in ways that either encourage or discourage entry into new technology industries by entrepreneurial growth companies.

ACTION AGENDA

- ☑ Pursue a trade expansion policy that supports more global activity by EGCs and provide support to these companies to enhance their capacity to engage in more international trade.
- ☑ Enhance the opportunities for entrepreneurs as industries are deregulated, as rules for new industries are drafted, and as existing intellectual property laws, telecommunications law, and anti-trust are applied in the future.
- ☑ And as they take these steps, policymakers should aggressively seek the advice of entrepreneurial companies to understand their requirements.

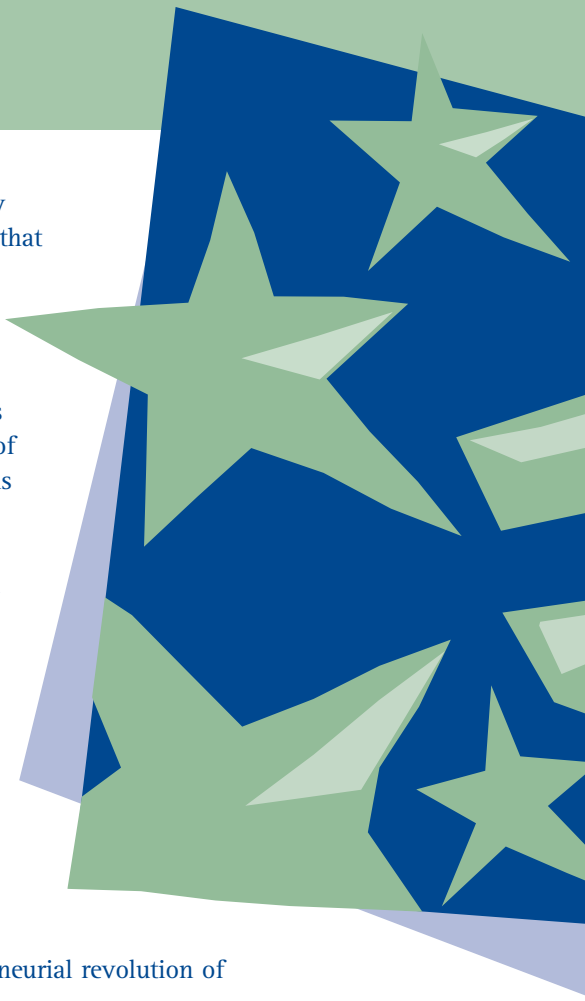
5. Challenge of Supporting a Robust and Dependable Infrastructure

First, the information economy is driven by communications infrastructure, and a growing cadre of experts believe that deployment of "broadband" communications capacity is critical to the nation's future economic success.[130] Second, other experts point to the need for policymakers to seed the development of the key social infrastructure component of entrepreneurial economies—networks of entrepreneurs—in communities around the country where entrepreneurial potential is great but activity to date has been slow.[131] Finally, there are regions and groups within the country where rates of entrepreneurship are relatively low, but where the opportunity is great: among women, rural communities, inner cities, and certain minority communities. Efforts to seed financial, social, and other support infrastructure could have an enormous impact on spreading the benefits of entrepreneurial opportunity in these under-performing communities.

ACTION AGENDA

- ☑ Take advantage of the broad range of tools available to policymakers to spur entrepreneurial activity in the United States and use the private sector to deliver services directly to entrepreneurs.
- ☑ Take the bold steps required to build out the next phase of critical physical infrastructure—broadband deployment.
- ☑ Seed the social and other support infrastructure institutions in regions and communities of the country where the opportunity for entrepreneurial expansion is great and where rates of entrepreneurial activity are unacceptably low.

Conclusion: Is it Nature or Nurture? What the Nation Could Be



These policy challenges and the policy successes of the last 40 years suggest that we need to rethink the inevitable and inherent connection between the words "America" and "entrepreneurship." To many people, the phrase means that the United States is the leading entrepreneurial economy of the world primarily because Americans are just natural entrepreneurs—self-reliant, individualistic, risk-taking, frontier-exploring pioneers living in a unique national culture that supports them.

But two amendments to this way of thinking now seem to be clearly in order. First, public policies have created an American formula that has contributed significantly to an acceleration of activities by America's natural entrepreneurs. These policies played a role in enabling the entrepreneurial revolution of the last quarter of the 20th century.

And second, failure to adjust and improve the formula for growth may cause America's entrepreneurs to stumble seriously on the future road to success, no matter how individualistic or self-reliant they may be by nature. The cost to the economy could be severe—measured in jobs not created, innovations not brought to market, industry leadership ceded to other nations, upward social and economic mobility slowed, and wealth not created and not rein-

vested in our communities. So public policymakers need to own up to their responsibility to meet these challenges.

Moreover, they need to address these challenges within the context of a larger vision. Job-creation numbers or counting up EGC innovations is important, but they are not the result of some input-output model. The policy contributions discussed in this report produced a powerful formula for economic growth. As we address the challenges of the 21st century, we do well to keep in mind that the adjustments we make to the American formula for growth must be judged by a high standard—whether the new, improved formula will help yield a society: where opportunity is available to all Americans, irrespective of race, income, religion, or place; that is sustainable, self-sufficient, and healthy; whose educational system prepares young people for active, vibrant, responsible lives as entrepreneurial citizens; that perpetuates the creation of opportunity for future generations to come; that encourages a spirit and ethic of giving-back to our communities through philanthropy; and that secures our international economic competitiveness as well as our national and homeland security.

Appendix of Acronyms

APEC. Asia Pacific Economic Cooperation
COBRA. Consolidated Omnibus Budget Reconciliation Act
DARPA. Defense Advanced Research Projects Agency
DOD. Department of Defense
EGC. Entrepreneurial Growth Company
ERISA. Employee Retirement Income Security Act
ESOP. Employee Stock Ownership Plan
ESPP. Employee Stock Purchase Plan
FASB. Financial Accounting Standards Board
FCC. Federal Communications Commission
FDA. Food and Drug Administration
GAAP. Generally Accepted Accounting Principles
GATT. General Agreement on Tariffs and Trade
IASB. International Accounting Standards Board
IPOs. Initial Public Offerings
IRAs. Individual Retirement Accounts
ISOs. Incentive Stock Options
NAFTA. North American Free Trade Agreement
NCOE. National Commission on Entrepreneurship
NCTTA. National Competitiveness Technology Transfer Act
NIH. National Institutes of Health
NSF. National Science Foundation
NYSE. New York Stock Exchange
R&D. Research and Development
SBA. Small Business Administration
SBIC. Small Business Investment Company
SBIR. Small Business Innovation Research
SEC. Securities and Exchange Commission
UCC. Uniform Commercial Code
VC. Venture Capital
WTO. World Trade Organization

Endnotes

1 Timmons, Jeffry. 1999. *America's Entrepreneurial Revolution: The Demise of Brontosaurus Capitalism*. Wellesley: Babson College.

2 In fact, entrepreneurs themselves are acutely aware of the networks of other people on whom they depend for their success. See, for example, National Commission on Entrepreneurship (NCOE). 2000. *Building Companies, Building Communities: The Entrepreneur and the New Economy,*17-19. Washington, DC: NCOE. Also see, NCOE. 2001. *Five Myths about Entrepreneurs: How New Businesses Start and Grow,*10. Washington DC: NCOE. Also, NCOE. 2001. *Building Entrepreneurial Networks*. Washington DC: NCOE.

3 See Baumol, William J. 2002. *The Free-Market Innovation Machine*. Princeton: Princeton University Press. See also Rosenberg, Nathan, and L.E. Birdzell, Jr. 1986. *How the West Grew Rich: The Economic Transformation of the Industrial World*. New York: Basic Books. See also de Soto, Hernando. 2001. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

4 Johnson, Barnabas. 1998. *The Meaning of "Rule of Law": Ten Principles Governing Law and Law-Making.* http://www.jurlandia.am/rol.htm.

5 See de Soto (2001).

6 See, for example, the treatment of "start-up solitaire" in Ashbrook, Tom. 2000. *The Leap*, 235-237. New York: Houghton Mifflin Company.

7 Regulation D and Rules 504-506, promulgated under the Securities Act of 1933. See 17 CFR Section 230.504-506.

8 Once banking laws required that everyone, without regard to race or sex, had equal credit opportunities, banks blanketed consumer market with applications and approvals.

9 Federal Rules of Bankruptcy Procedure. http://www.abiworld.org/legis/FRBP.pdf. http://www.abiworld.org/media/chapters.html.

10 On the role of fear of failure in determining entrepreneurship levels, see Reynolds, Paul et al. 2001. *Global Entrepreneurship Monitor: 2001 Executive* Report, 23. Kansas City: Kauffman Center for Entrepreneurial Leadership.

[11] The Small Business Administration's 7(a) Loan Guaranty Program provides loans to small businesses unable to secure financing on reasonable terms through normal lending channels. The program operates through private-sector lenders that provide loans which are, in turn, guaranteed by the SBA — the Agency has no funds for direct lending or grants.

[12] Reynolds, Paul and Michael Hay and S. Michael Camp. 1999. *Global Entrepreneurship Monitor*, 19. Kansas City: Kauffman Center for Entrepreneurial Leadership.

[13] The Revenue Act of 1978 (Pub. L. 95-600); The Economic Recovery Tax Act of 1981 (Pub. L. 97-34); The Deficit Reduction Act of 1984 (Pub. L. 98-369) ; The Tax Reform Act of 1986 (Pub. L. 99-514) ; The Revenue Reconciliation Act of 1990; and The Taxpayer Relief Act of 1997.

[14] The Tax Reform Act of 1986 (Pub. L. 99-514) not only eliminated numerous specific tax shelters, it repealed the net gain deduction for individuals (capital losses were unchanged) and reduced the statutory rates from a maximum of 50% to 33%, including those on capital gains.

[15] Reynolds, Camp, et al. *Global Entrepreneurship Monitor 2001 Executive Report*, 24. Kansas City: Kauffman Center for Entrepreneurial Leadership.

[16] http://www.nvca.com.

[17] See 15 United States Code (USC) Section 687 et seq.

[18] http://www.nasbic.org.

[19] 29 C.F.R. § 2550.404a-1.

[20] Gallucio, Nick. 1979. "Comeback for the Dream Machine." *Forbes* (June 25).

[21] *Wall Street Journal*. June 6, 1980.

[22] See 15 USC 80-51 et seq., and 15 USC 80b.

[23] Heesen, Mark. "Exploring the Venture Capital and Entrepreneurial Relationship," presentation at Capital Connection, November 6, 2000, citing VentureXpert Database.

[24] See http://www.kpcb.com.

[25] In 1961, Congress authorized the Security and Exchange Commission (SEC) to conduct a study of fragmentation in the over-the-counter market. The SEC proposed automation as a possible solution and charged the NASD with it implementation. In February 8, 1971, NASDAQ began trading. (http://www.nasdaq.com/about/about_nasdaq_long.stm#evolution).

[26] See 26 USC Part III.

[27] National Commission on Entrepreneurship (NCOE) E-News (12.11.00) http://www.ncoe.org/newsletter/enews/12_11_00.html.

[28] 15 USC section 18a.

29 Salus, Peter H. 1995. *Casting the Net: From ARPANET to Internet and Beyond*. Reading: Addison Wesley Longman, Inc.
30 Waldrop, Mitch. 2001. *The Dream Machine*. New York: Viking Press.
31 Mowery & Rosenberg. 1998. *Paths of Innovation*, 142-144. Cambridge: Cambridge University Press.
32 Defense Advanced Research Projects Agency, "Mission and History," http://www.darpa.mil/.
33 For example, NSF funding for universities increased from almost zero dollars in 1956 to almost $34 million twenty years later. Ibid., Mowery & Rosenthal at p. 143.
34 The Small Business Innovation Development Act of 1982.
35 Lerner, Josh. 1999. "The Government as Venture Capitalist: The Long-Run Impact of the SBIR Program." *Journal of Business* (vol. 72, no. 3): 315.
36 The Bayh-Dole Act of 1980 (P.L. 96-517) (35 U.S.C. §§200-212).
37 The Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480) (15 U.S.C. §§3701-3717) was enacted to encourage the use of technologies developed in the federal laboratory system.
38 National Competitiveness Technology Transfer Act of 1989 (P.L. 101-189).
39 http://www.sri.com/policy/stp/techin/inter2.html.
40 Constitution of the United States, Article I, Section 8, Clause 8.
41 See Title 35 of the United States Code.
42 See 35 USC 282.
43 *Diamond v. Chakrabarty*, 206 USPQ 193.
44 35 USC 141; 28 USC 1295.
45 35 USC 173.
46 35 USC 156.
47 35 USC 141.
48 35 USC 105.
49 35 USC 154.
50 35 USC 103(b).
51 *State Street Bank v. Signature Financial*, 149 F.3d. 1368, 47 USPQ2d 1596 (Fed Cir. 1998).
52 See generally Title 17 of the U.S. Code.
53 17 USC 301-305.
54 17 USC 501.
55 17 USC 502 to 506.
56 17 USC 401 to 412.
57 17 USC 107.
58 17 USC 102.
59 17 USC 901 et seq.

60 Zacharakis, Andrew and Paul Reynolds and William D. Bygrave. 1999. *Global Entrepreneurship Monitor: National Entrepreneurship Assessment – United States of America*, 4. Kansas City: Kauffman Center for Entrepreneurial Leadership.

61 Timmons, Jeffry. 1998. *America's Entrepreneurial Revolution: The Demise of Brontosaurus Capitalism*, 11. Wellesley: Babson College.

62 *Five Myths About Entrepreneurs* (National Commission on Entrepreneurship, March 2001) p. 21.

63 26 USC § 422.

64 26 USC § 423.

65 26 USC § 409.

66 See *NCOE Update*, "Global Investing And Finance: Do You Always Know The Company?" at http://www.ncoe.org/newsletter/update/01_07_02.html.

67 Ibid.

68 The Bankruptcy Reform Act of 1978 substantially revamped bankruptcy practices. A strong business reorganization Chapter was created, Chapter 11. This replaced the old Chapters X, XI and XII that had been created by the 1898 Act and amended by the Chandler Act. Similarly, a more powerful personal bankruptcy, Chapter 13, replaced the old Chapter XIII. In general, the Reform Act of 1978 made it easier for both businesses and individuals to file a bankruptcy and to reorganize. See (http://www.bankruptcydata.com/Ch11History.htm).

69 29 U.S.C. §§1161-1169. The Consolidated Omnibus Budget Reconciliation Act (COBRA) was enacted was enacted on April 7, 1986.

70 Tax Reform Act of 1969 (P.L. 91-172); Revenue Act of 1978 (P.L. 95-600); Tax Reform Act of 1986 (P.L. 99-514).

71 IRAs were first created with the enactment of the Employee Retirement Income Security Act of 1974.

72 See, for example, California Business and Professions Code Section 16600: "... every contract by which anyone is restrained from engaging in a lawful profession, trade or business of any kind is to that extent void."

73 Regarding the very strict interpretation of employment agreements, see Bui-Eve, Hanna. 1997. "To Hire or Not to Hire: What Silicon Valley Companies Should Know about Hiring Competitors' Employees." *Hastings Law Journal 981,* 48.

74 The Higher Education Act of 1965 [20 U.S.C. §§1001 – 1155]; The National Defense Education Act of 1958 [20 U.S.C. §§401 – 602]; Federal Pell Grants [20 U.S.C. §1070(a)]; Federal Perkins Loans [20 U.S.C. §2301 et. seq.]; Federal Direct Stafford Loans [20 U.S.C §1078]; Federal Direct PLUS Loans [20 U.S.C. §1078-2]; Federal Direct Unsubsidized Stafford Loans [20 U.S.C. §1078-8]; and Federal Student Assistance [20 U.S.C. §§1070-1099c-2].

[75] National Academy of Sciences. 2001. *Trends in Federal Support of Research and Graduate Education*. Washington, DC: National Academy Press.

[76] Romer, Paul. 2002. *"Should the Government Subsidize Supply or Demand in the Market for Scientists and Engineers?" NBER Working Paper 7723*. Washington, DC: National Bureau of Economic Research.

[77] Saxenian, AnnaLee. 1994. *Regional Advantage*, 72. Boston: Harvard University Press.

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[79] Saxenian, Annalee. 1999. *Silicon Valley's New Immigrant Entrepreneurs*. San Francisco: Public Policy Institute of California.

[80] Public Policy Institute of California. 2002. *"Silicon Valley Immigrants Forging Local and Transnational Networks," Research Brief, April 2002*, San Francisco: Public Policy Institute of California.

[81] See Saxenian, Annalee. 1994. *Regional Advantage*.

[82] http://www.fedex.com/us/about/express/history.html.

[83] http://www.american.edu/carmel/as7601a/TruckOv.htm.

[84] Chan, Daniel. 2000. "The Development of the Airline Industry From 1978 to 1998: A Strategic Global Overview." *Journal of Management Development* (June): 489.

[85] http://www.iflyswa.com/about_swa/airborne.html.

[86] See Knott, C.D. "The History and Ramifications of the MCI Decision" at http://casey.knott.com/325.html.

[87] U.S. v. IBM Corp, Civil Action No. 72-344.

[88] See The Intermodal Surface Transportation Efficiency Act (ISTEA) and its highway system predecessors at 49 USC 5500 et seq.

[89] The Airline Deregulation Act, signed into law on October 24, 1978, phased out most forms of airline economic regulation.

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[91] Florida, Richard. 2000. "Competing in the Age of Talent: Environment, Amenities, and the New Economy" Report prepared for the R.K. Mellon Foundation, Heinz Endowments, and Sustainable Pittsburgh (January 2000) <pub/working_papers/austin_american_statesman.htm>.

[92] Clean Air Act of 1970, P.L. 91-604, 42 U.S.C. §§7401 – 7431.

[93] Clean Water Act of 1977, P.L. 95-217, 33 U.S.C. §§1259 – 1272.

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[95] G.I. Bill of Rights (1944), P.L. 346.

[96] National Defense Education Act of 1958, P.L. 85-864.

[97] Higher Education Act of 1965, P.L. 89-329.

[98] NSF funding for universities increased from almost zero dollars in 1956 to almost $34 million twenty years later. Ibid., Mowery & Rosenthal at p. 143.

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[100] Attributed to John Chambers, CEO of Cisco Systems, by Sandy Robertson (formerly principal of Robertson Coleman Stephens) in a speech on July 10, 1999, in San Francisco, California.

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[103] FNC, p. 50.

[104] FNC, p. 50.

[105] Hopkins, p. 35 (citing IRC §§ 170(b)(1)(A) and 170 (b)(1)(C)(i)).

[106] Hopkins, p. 35 (citing IRC §§ 170(b)(1)(B) and 170 (b)(1)(B)(i)).

[107] FNC, 54 (citing IRC § 170(e)(5).

[108] FNC, p. 33.

[109] FNC, p. 50.

[110] FNC, p. 61.

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[112] See *NCOE Update,* "Letter from Europe: Things May Already Have Changed," (November 26, 2001) at http://www.ncoe.org/newsletter/update/11_26_01.html.

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[115] See Fong, Glenn. 2001. *Issues in Science & Technology* (November).

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[125] See, for example, the Workforce Investment Act of 1998. P.L. 105-220.

[126] See, for example, the experience of Olin College in Wellesley, Massachusetts. They are attracting some of the best and brightest high school students to a rigorous engineering program with free college tuition. These students are turning down admissions offers from Harvard, Cal Tech, MIT, and Stanford.

[127] See *NCOE Update,* "Letter from Europe: Things May Already Have Changed," (November 26, 2001) at http://www.ncoe.org/newsletter/update/11_26_01.html.

[128] Several venture capital funds have been founded recently to focus on this emerging opportunity. See, for example, Nth Power Energy Venture Capital Fund at http://www.nthfund.com/index.html.

[129] See *NCOE Update,* "Wireless Auctions: Whatever Happened To The Entrepreneurs?" (February 21, 2001)_at http://www.ncoe.org/newsletter/update/02_21_01.html.

[130] See *NCOE Update,* "The Telecom Crash: A Meltdown Or A Healthy Pause?" (May 15, 2001) at http://www.ncoe.org/newsletter/update/05_15_01.html.

[131] Axelrod & Cohen. 1999. *Harnessing Complexity,* pp 62-116. New York: Basic Books. See also, National Commission on Entrepreneurship. 20001. *Building Entrepreneurial Networks*. Washington, DC.

The National Commission on Entrepreneurship, an initiative of the Kauffman Center for Entrepreneurial Leadership at the Ewing Marion Kauffman Foundation, was established to provide local, state, and national leaders with a roadmap for sustaining and expanding a flourishing entrepreneurial economy. Entrepreneurship is the critical force behind innovation and new wealth creation—the key drivers of our country's economic growth. Through research, publishing, conferences and other events, the Commission promotes an agenda that helps grow a successful entrepreneurial economy in the 21st century.

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